# SDS 23.0

User guide

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Welcome to the SoftThinks Deployment Suite (SDS) 23.0 User Guide!

SDS is a unified, modular and multiplatform (Windows, macOS, Linux x86/x64 devices) solution for deployment, maintenance and repair.

**WARNING: This product, being scalable and customizable, some features described in this document may not be available in your version of the product and the screenshots may not exactly match your workflow. Also, some customizations of your product version may not be described in this document.**

What's new?
This version 23.0 mainly brings the following changes compared to version 22.0:

1. Windows devices support
    a. Windows 11 is now clearly referenced as Windows 11 and no more Windows 10 (please update your WINVISTA_11_64 env_files accordingly)
    b. Increased Windows ARM64 devices support (we can now image/deploy/wipe Qualcomm ARM64 devices with multiple partitions emulating BIOS)
2. macOS devices support
    a. Increased support of Apple HD drives
    b. Increased audio and webcam tests compatibility
    c. Increased macBooks keyboard support
    d. Enabled webcam test on iMac
3. Chromebooks & Chromium OS devices
    Please ask your Softthinks referent if you want to process such devices
4. Hardware support and detection
    a. Intel AVStream camera in MS Surface (requires Intel GPU & camera drivers in the boot image)
    b. QLogic network cards
    c. LSI RAID card
    d. Apple devices SATA disks
    e. HP batteries
    f. ATTO H680 cards
5. Deployment enhancements
    a. Increased language pack injection coverage by adding support of Feature On Demand (FOD) cab files
6. Wipe enhancements
    a. Improved cryptographic sanitize detection
    b. Increased USB NVME health detection compatibility (added support for ASMedia, Realtek, JMicron chipsets)
    c. Enhanced support of LSI RAID card (added the ability to break down RAID arrays into individual drives for wiping)
    d. Wipe can now be automatically canceled if some SMART attributes values are lower than specified thresholds
7. Hardware Diagnostics enhancements:
    a. General
        i. When a test cannot run, or if we cannot interpret automatically its result, or if we find inconsistencies in the information grabbed, you can now specify which result you expect (automatically), or allow the operator to decide
        ii. You can now specify if a component to test is mandatory on laptop or on All-In-One or on other devices in order to have a different behavior and result
        iii. Added the possibility to add a comment when skipping a test, or when a test cannot run or be interpreted, and store it in SQL Database to be shown on Dashboard and, on demand, in reports (this can be disabled)
        iv. Added the possibility to set the screen brightness (and contrast for external monitor) during the whole test session

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v. Added the ability to kill manually (right-click on the test to kill) or automatically after a specified timeout a test
vi. Distinguished all sub-devices tests result for tests like USB Ports tests, Display Ports tests, ... to clearly identify the faulty sub-device when relevant

b. Keyboard test:
i. Added detection and reporting of keys not released
c. USB Ports test:
i. Prevented the operator to test several times the same USB port
d. Battery test
i. Fixed a potential issue preventing the battery test to be run on some laptops
ii. Fixed an issue occurring for batteries without capacity sensor
iii. We now fail the battery health test if the current maximum capacity is greater than the designed one, or if equal to the designed one whereas the battery is several years old, or if the value is unrealistic
e. Wi-Fi test
i. Added the possibility to test also the 5GHz sub-network when supported (See Wi-Fi (WLAN) test)
f. Webcam test
i. Enabled webcam test for All-In-One devices
ii. Increased compatibility with Apple devices
g. Audio test
i. Increased compatibility with Apple devices
ii. Added the possibility to use any Wave file

8. SQL DB and ERP integration
a. New tables have been introduced to store statistics more distinctly
9. SDS Console enhancements:
a. Added the possibility to group the PNPs by signature hardware file or by device type
b. Added Wi-Fi test settings
10. Script enhancements
a. Added the possibility to have different processes / flows depending on the manufacturer (for example for Apple devices)
11. Reports enhancements
a. Complete new Report Generator application compatible with new SQL tables
b. Reports (XLS/PDF/XML) can now be generated even if the overall process result is a failure
c. Totally customizable (both contents and look & feel) HTML templates replacing XLS template for PDF reports
d. Added the possibility to generate at any time any type of report, including labels, from deployment IDs, but also device S/N and device MAC address
e. Reports can be automatically printed, uploaded to FTP and sent by email
12. Stability and memory usage improvements
13. Various fixes, enhancements and optimizations

We also developed a Dashboard (web portal) to which you can push all operations made on your SDS server(s), make them accessible to whomever you want with specific rights in a very convenient and customizable graphical way. You can also export statistics very easily with many filters and criteria (See SDS Dashboard User Guide).

If you created bootable USB sticks with an older version you will need to update them (See Create Deployment USB stick).

**It is mandatory to update your WinPE image(s) to the latest version for full compatibility with all Windows versions and the support of the latest enhancements, bring to Bitlocker for example, but also for the hardware diagnostics.**

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# Glossary

## Definitions, Acronyms and Abbreviations used in this user guide

| Term | Explanation |
|---|---|
| ADF | **A**utomatic **D**eployment **F**ile: Similar to the Profile in that it is linked to specific hardware. The difference is that it also is named with a unique identifier for the model being deployed such as the Motherboard Part Number |
| Boot key / stick | Bootable USB key you can use to boot a computer without PXE boot |
| BTO | **B**uilt **T**o **O**rder: These are PCs that are built as they are ordered by the customer with a specific hardware configuration |
| CRC | **C**yclic **R**edundancy **C**heck: Error correction method |
| CTO | **C**onfigured **T**o **O**rder: These are PCs that are installed with a specific set of software as ordered by the customer |
| Factory Image | First complete system backup made in Factory to restore the system to its Factory state. |
| FAT | **F**ile **A**llocation **T**able: File System managing files up to 4GB |
| INF | This refers to the text files that permits the installation of peripheral, those files are using the extension .INF (mymodem.INF) |
| LAN | **L**ocal **A**rea **N**etwork |
| MBR | **M**aster **B**oot **R**ecord |
| Nomad Disk | Instead of using a server, you install the software on an external hard drive. |
| NTFS | **N**ew **T**echnology **F**ile **S**ystem: file system was introduced originally in Windows NT. It has been used in all versions since Windows 2000. NTFS is reliable, fast, and virtually incorruptible and can recognize and format large hard disks |
| OOBE | **O**ut-**O**f-**B**ox **E**xperience |
| PnP | **P**lug a**n**d **P**lay: system that enables the installation of peripherals without any manual operation on the hardware (I.e. Jumpers) |
| PnP ID | Plug a**n**d **P**lay **ID**entifier: strings returned by PnP hardware when enumerated by the operating system |
| POST | **P**ower **O**n **S**elf **T**est: Sequence of test that happens while a PC is cold-booting (i.e. RAM count) |
| Preset | Predefined setup of options that can be applied to any unit (not linked to any specific hardware) in order to deploy Generic Images |
| Profile | Predefined setup of options linked to specific hardware and so which it can only be used to deploy Static Images to a specific model of computer |
| PXE | **P**reboot e**X**ecution **E**nvironnement |
| RIS | **R**emote **I**nstallation **S**ervices |
| Smart Image | Small update to the base image that is applied to the same hardware that captured from. The system will apply the base image and then the smart images |
| WinPE / WinRE | **Win**dows **P**reinstallation **E**nvironment: lightweight version of Windows used for the deployment of workstations and servers or troubleshooting an operating system while it is offline |
| WinRE | **Win**dows **R**ecovery **E**nvironment: used primarily to help save or salvage your Windows operating system |

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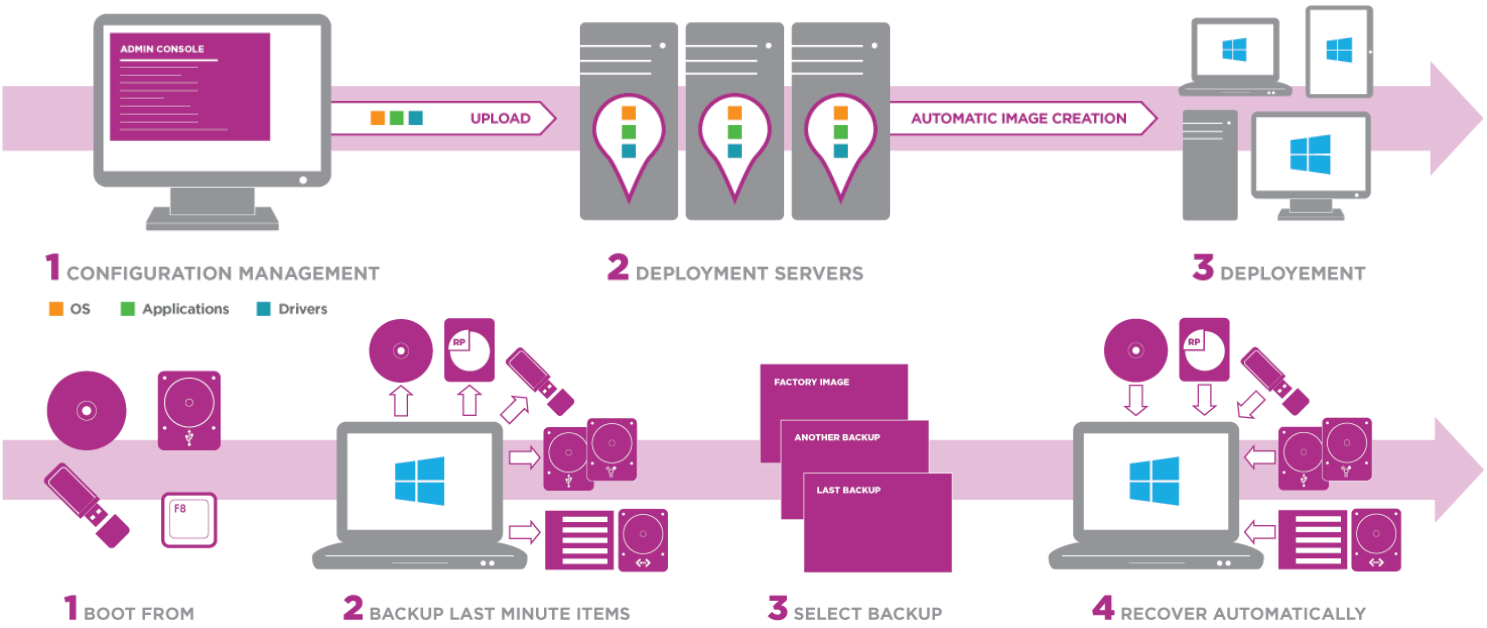
# Presentation

Designed for your devices, SDS allows you to effectively manage the process of devices deployment / diagnostic / repair / refurbishing.




## SDS: A 360° multi-device solution

SDS can process the following devices:

- ✓ Windows x86/x64 devices (desktops, laptops, servers, tablets):
  - All SDS features including static and generic deployment, wipe, diagnostic…
- ✓ Windows ARM64 devices (Microsoft Surface Pro X, Qualcomm ARM64 devices with partitions emulating BIOS)
  - Deployment and wipe
- ✓ macOS devices (MacBook, MacBook Air, MacBook Pro, iMac, Mac mini) using Intel CPUs (not Apple Silicon as M1/M2… for the moment)
  - Deployment (through static images with partitions extension), wipe and diagnostic.
- ✓ Linux devices
  - Deployment (through static images with partitions resizing), wipe and diagnostic. Support depends on Linux distribution and disk layout.)
- ✓ Chromebooks and Chromium OS devices
  - Diagnostic and wipe
- ✓ Disks
  - Diagnostic and wipe (through racks, enclosures…)
- ✓ iOS & Android smartphones and tablets (through a partnership)
  - Diagnostic, update, deployment, wipe…

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# SDS: Industrialization to reduce repair and production costs

- Automatic deployment solution:
  - Deploy according to BOM, hardware PNP, …
  - Full BTO/CTO support
- One controlled process:
  - Entire process managed by using a powerful script
  - Embedded automatic decision maker
- More services for more profitability:
  - Each module by service, can be activated on an as needed basis
  - High added value branded services for end-user support and maintenance
  - On-site and off-site availability

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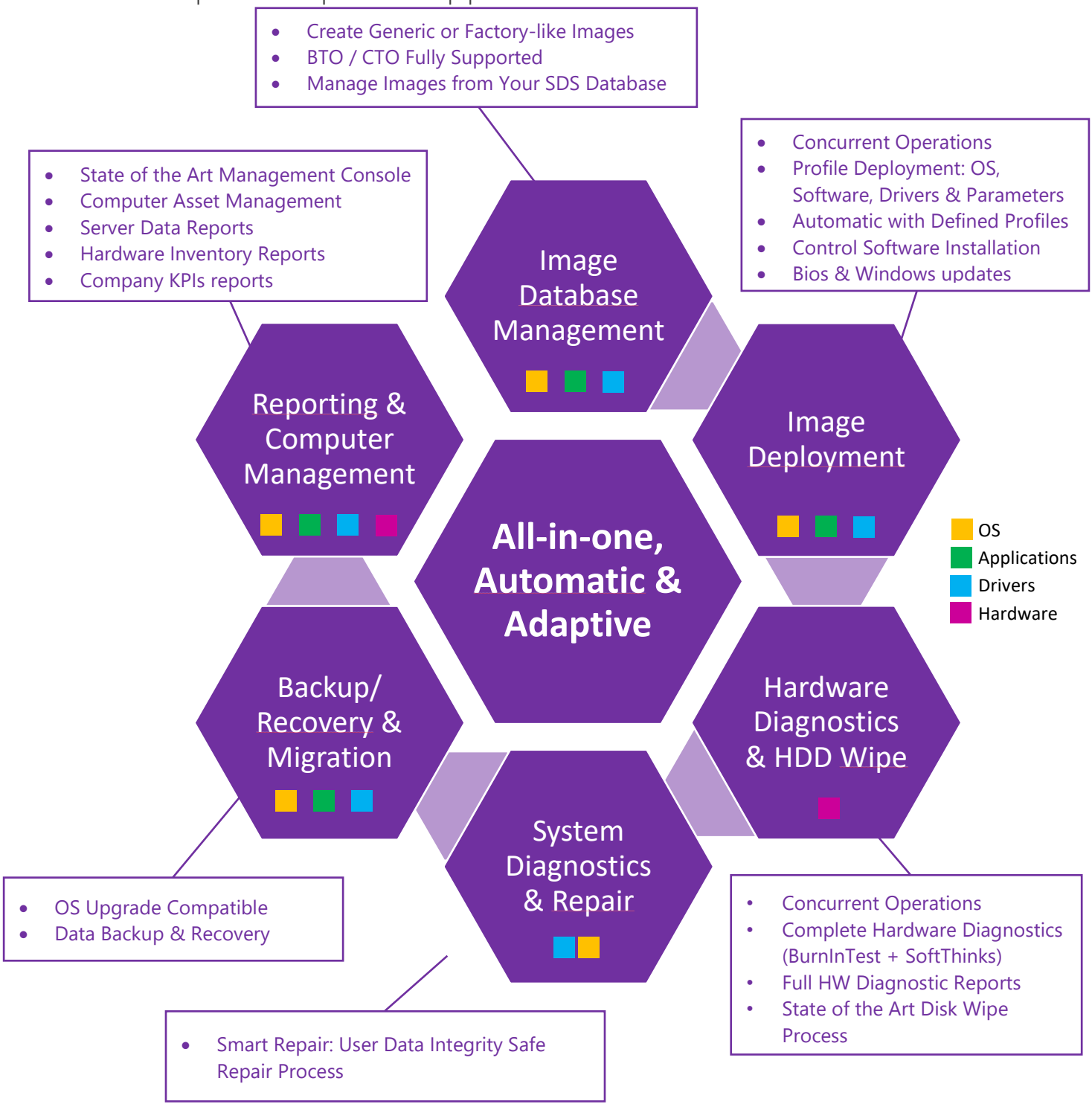
# SDS: Unique Computer Support Solution




**All-In-One** : The Most Complete Deployment, Maintenance & Refurbishing Package Available
**Automatic** : Capable of Being Automated and Can Run Features Simultaneously
**Adaptive** : Modify up to 20 Features for Manufacturing Original Equipment, Managing Computer Repair Centers, Running Refurbishing Activities, Maintaining Computers, Running Small Repair Businesses

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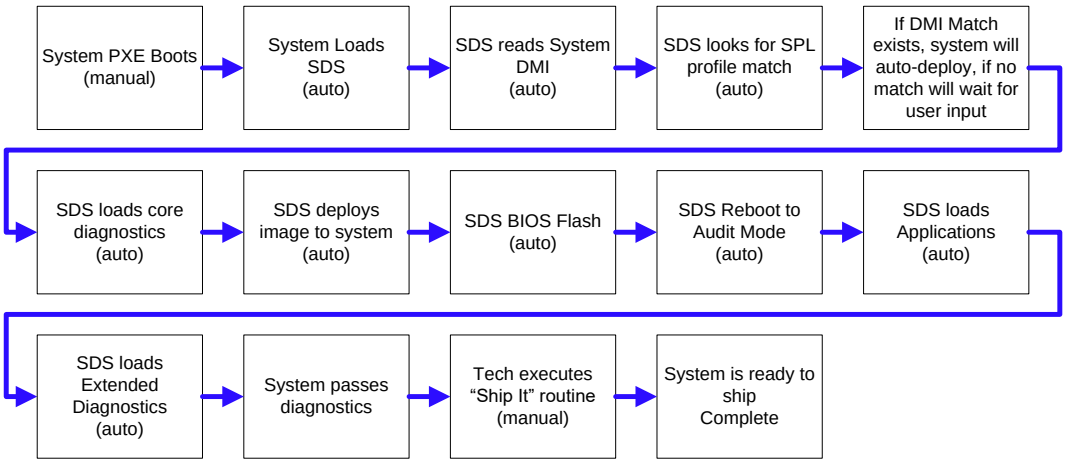
# SDS: Deployment Process Flow

SDS Deployment process – by default the SDS deployment process follows the below steps. This process is modular and can be customized to support individual customer's needs. This process is just to give you a good idea of the automated process SDS provides. Images used in this process are captured in Audit mode with sysprep.exe running on the desktop.

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# Dynamic Technology Overview

This chapter aims to give you a broad picture of what is SoftThinks Dynamic Preload and Recovery Technology using the example of a BTO/CTO PC manufacturer.
Of course, all parts briefly covered in this Technology Overview will be thoroughly detailed throughout this manual as we go along with the different processes involved. However, reading this overview should help you understand the more technical issues you will face during the implementation of the technology as described in the manual. You will also be ready to prepare your company's production and recovery strategies.

## BTO/CTO PC Manufacturing Industry production facts

**Consider the following example:**

- A PC manufacturer produces **BTO** PCs using the 17 following devices which require specific set-up during production such as driver integration within the operating system preinstalled before shipment of the PC:
  - 4 x Motherboards
  - 5 x Graphic cards and their bundle software
  - 3 x Sound Cards and their bundle software
  - 2 x Modems and their bundle software
  - 3 x Network devices

*Note: Although there can be some other hardware specifications like cases, CPUs, hard disks, we do not take them into consideration in our example, as they do not affect the pre-installation process in production nor the restore of the PC after a crash at end user level.*

Only considering the different hardware configurations, the "OEM" already has a potential of 4 x 5 x 3 x 2 x 3 = **360** different PCs that can leave the production line (BTO).

- "OEM" is also doing **CTO** PCs, and therefore technicians in production could have to preinstall 1, 2 or 3 different applications (or none) on their PCs according to each client requirements.

  Therefore, you can now multiply the BTO PCs figure by the 9 (= 3 x 3) combination of applications "OEM" could ship with its equipment (plus one when no software is shipped):

  360 x 10 = **3600** different PCs or with different software configurations (BTO/CTO).

*Problem*:

In our example, - quite common in the BTO/CTO industry -, it is obviously almost impossible to create as many different static images prepared to fit all or even part of these configurations for a fully unattended preload process in production. This means that, even though "OEM" can prepare a few static images for some PCs, the technician would very often have to complete the pre-installation of most PCs produced manually.

*Answer*:

SoftThinks offers with the Dynamic Technology to pre-install all PCs in production with a unique and universal Master Image per operating system and language deployed through the network or with a hard disk using a replication platform or a cloning software.

*Problem*:

It also seems almost impossible to provide the end user with a recovery device that could restore the PC to at least factory level without any manual integration of drivers, bundle software or applications.

*Answer*:

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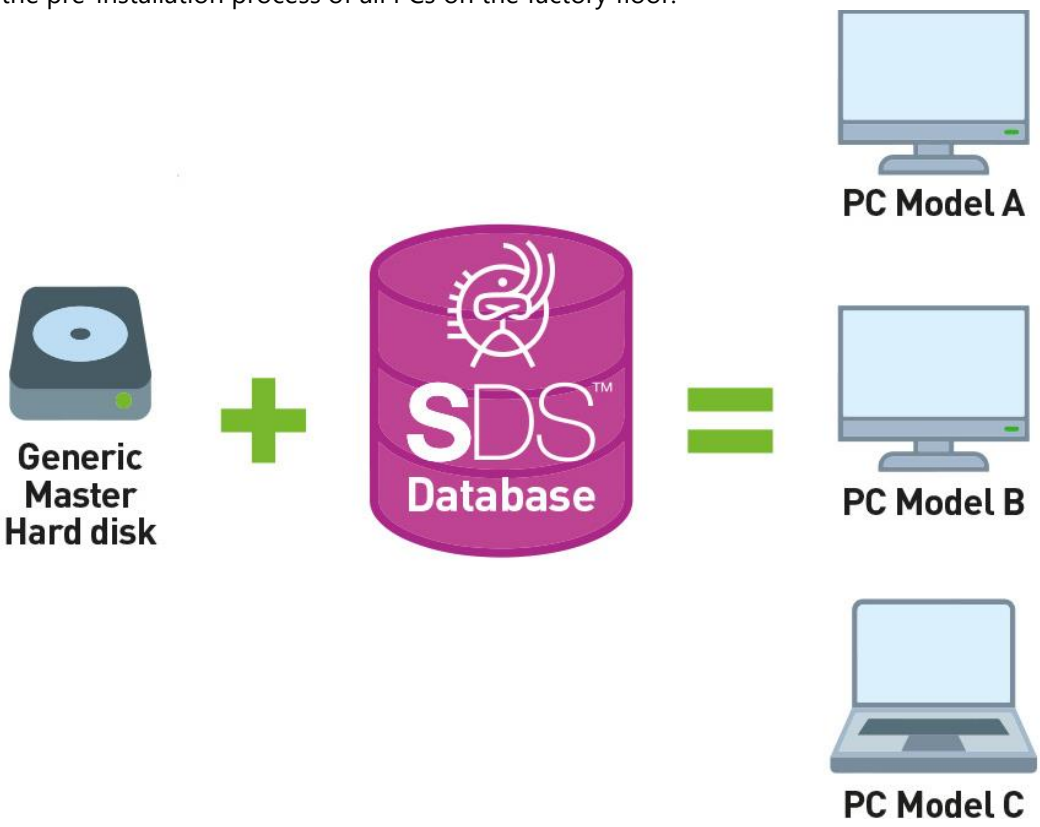
**SoftThinks Backup and Recovery** is a full Recovery Program which can be preinstalled on hard drive.

# How does SoftThinks Dynamic Technology handle the BTO/CTO situation?

## Basic principle

The Dynamic Technology basic principle is to merge a Generic Master common to the entire production with a database of all items that affect the pre-installation process of all PCs on the factory floor.




During deployment, all components of the Target PC are automatically recognized, and dynamically installed/configured with the items found in the database. The entire database being placed on the same Master, there is no need to create several images for different PCs.
The BTO deployment process is universal and unattended!
The same items are provided to the End User within SoftThinks Backup & Recovery system allowing a full restore of the PC in case of a crash.

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# SDS Deployment Environment

The best environment to take advantage of the SDS Deployment system is to have the following.

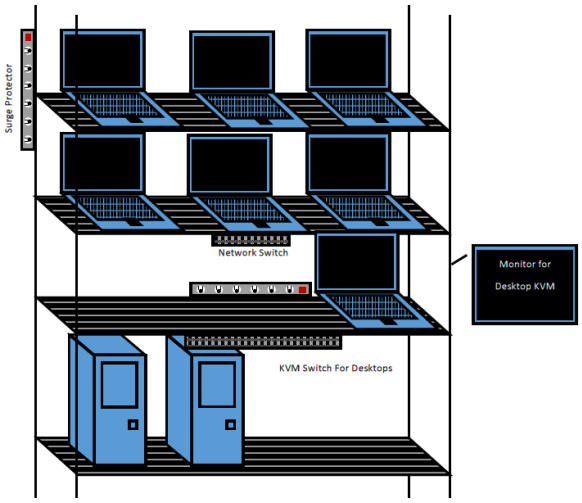
1. Line - Have a production line setup to allow for several PCs to be connected.
2. Server – Server running Windows Server 2008R2/2012 with the SDS software installed.
    a. Please refer to the section on server configuration recommendations for the optimal server configuration.
3. Ethernet Switch - 24 port Gigabit switch with non-blocking throughput 24 port switch should have a 48 GB backplane to allow 2 GB per port.
4. Network Cabling - Cat6 Cabling run from the Gigabit switch to each bay on the line.
    a. Cables run to the location for the SDS Server for each of the network ports on the server.
    b. Cat6 cabling is currently the best Gigabit Ethernet Cabled connections for electromagnetically noisy manufacturing environments.
5. Power - The line should have enough power to support the number of units to be processed, the server and the Gigabit Ethernet switches.
6. Systems - Have 2-5 systems loaded with the factory images on those systems.
7. SDS Console System – Can be run from the server desktop for the evaluation.
8. Technicians – 1-2 technicians to train on the SDS process.
    a. Technicians should be familiar with the current process that is being used at your location.

## SDS Line discussion and diagrams

The next step in the process is to use a second line to deploy the software to your systems.
Using a second line for software deployment will increase your throughput.
Here below is a diagram for an entry level SDS manufacturing refurbishment line.

1. Systems are lined up side by side on the line and run through the process.
2. If any systems fail during this part of the process, they are sent to a hardware repair area removing them from the valuable software deployment bay.
    a. Once the item is repaired it is returned to the line to be run through the process again until it passes and can be shipped.

*Live portable line for an example*




*Proven concept for more units at once in a smaller footprint.*
*Suggest U shape for work area*

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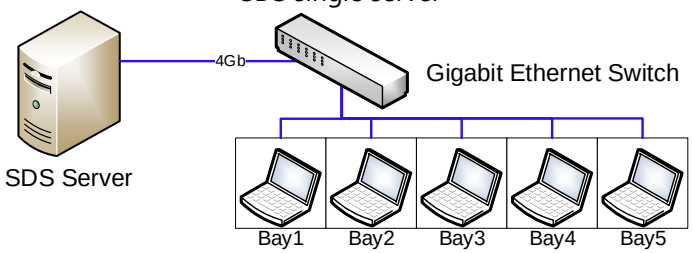
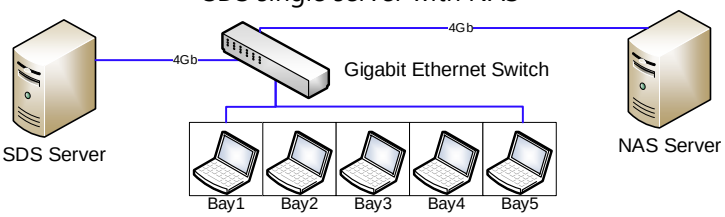
Adding a NAS to the solution allows you to increase throughput by dividing up the work. Server delivers the DHCP addresses the WinPE boot image and the NAS delivers the software being deployed to the systems. Below you will find multiple examples of configuration that can be utilized for maximum throughput during the deployment process:

SDS single server

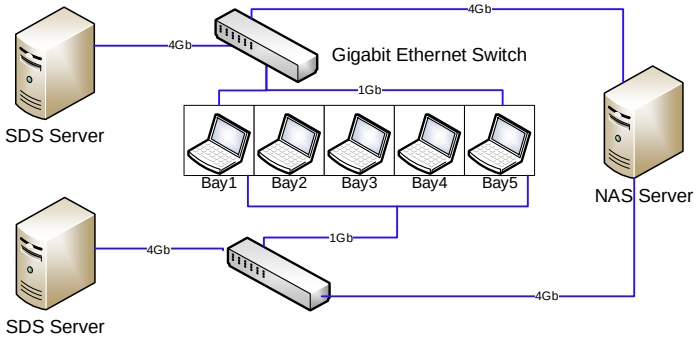


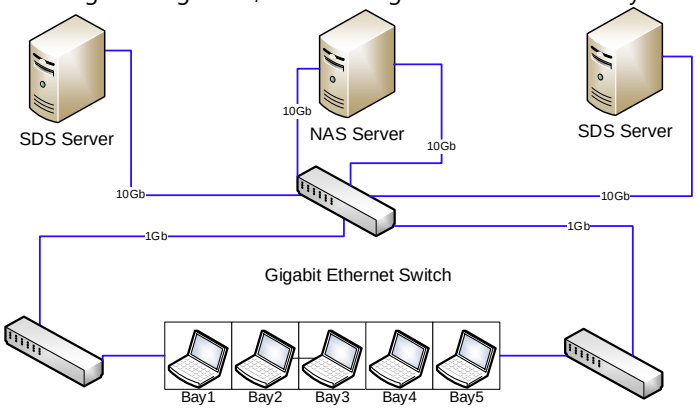

SDS single server with NAS




SDS Multiples Servers with NAS

The following illustrations show how multiple servers can be added to the NAS solution. Depending on network setup, a new server can simply be added to the current layout and utilize the same benefits of single storage area, and allowing for server redundancy.




Recommended configurations based upon the number of systems to manufacture per month or day, these can be scaled based on volume and network design:

| Item | Solution 1 | Solution 2 |
|---|---|---|
| **# of devices** | 4000/month or 200/day | 8,000/month or 400/day |
| **Servers** | 1 x Server from the "server configuration for SDS" (C.1) | 1 x Server from the "server configuration for SDS" (C.1), additional NIC ports for the server is recommended. |
| **NAS** | 1 x Server from the "server configuration for SDS" (C.1) | 2 x Server from the "server configuration for SDS" (C.1) |
| **Network Switch** | 1 x network switch with 24 client ports & 4 server ports | 2 x network switches with 24 client ports & 4 server ports |
| **Deployment Time** | 1 hour deployment * depends on below consideration | 1 hour deployment * depends on below consideration |
| **Deployment Time Considerations** | Target Machine performance (ex: mini vs. i7 core)<br>Preferred diagnostics configuration (cycles)<br>Size of image (20GB OEM Factory image on average) | Target Machine performance (ex: mini vs. i7 core)<br>Preferred diagnostics configuration (cycles)<br>Size of image (20GB OEM Factory image on average) |
| **Solution Capacity** | 1h/system x 24 systems at a time = 192 systems /day | 1h/system x 48 systems at a time = 384 systems / day |
| | Number of systems will vary depending upon average system load time.<br>Most systems deploy in under 1 hour. Average deployment times on Win 10 PC is 45 minutes per unit. Average download time from deployment server is 10 minute per system. The download speed can be faster if you are using 10Gb or faster backbone and the 1Gb switches are not chained.<br>Does not include DOD wiping time. Wiping time can vary depending on drive type, drive size and computer | |

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| | |
|---|---|
| | performances (from 30 seconds for a PCIe Nvme 256GB to 3h for a 500G SATA drive with Celeron processor) |

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# Installation & Configuration

## SDS Server Hardware Minimum / Recommended Requirements

- ✓ CPU: Intel Xeon E3 or Core i5 min / 4x 2GHz with 2MB L2 Cache or greater (8-16 Cores) recommended
- ✓ RAM: 8GB min / 64GB recommended
- ✓ Storage: 1 disk for the OS (ideally a 128GB or more SSD) and 1 disk for the database (ideally 2xHDD in RAID) min / 3 to 6 - 7.2K RPM SATA 6Gbps 3.5" HotPlug Enterprise Hard Drives or Higher configured in RAID 5 or 10 (SAS RAID Controller Internal with Battery w / 256MB cache) recommended
- ✓ Network: 2 gigabit network cards (2*1Gb/s for smaller operations. 10-20Gb/s for improve transfer speeds of images across large volume networks for larger operations or operations maximizing speed with less hookups)

We can adjust this configuration to scale for the number of systems to be processed at the same time.

## SDS Server Software Prerequisites

- ✓ Windows Server 2019 or higher (US or FR native with language pack if needed)
- ✓ Active Directory domain services and DNS Server DNS installed and configured
- ✓ DHCP Server DHCP installed and configured with the DHCP lease time set to 1h or 2h
- ✓ Windows Deployment Services (WDS) installed and configured
- ✓ WDS remote installation folder shared with Full Control for Everyone and labelled "RemoteInstall"
- ✓ Latest Windows Assessment Deployment Kit (Windows ADK) installed (download from https://developer.microsoft.com/en-us/windows/hardware/windows-assessment-deployment-kit)
- ✓ SQL server configured on the server where you want to store usage statistics (not required if you want to use SDS Dashboard)

Please refer to How to configure Windows Server to configure your server step-by-step in order to match the prerequisites above.

**Note:** It is technically possible, but not recommended, to install SDS on a non-Server Edition of Windows but with the following limitations:

- No PXE boot (but you can boot from a bootable USB key plugged on an Ethernet + USB ←→ USB adaptor)
- No native DHCP (See How to configure DHCP on a non-server edition of Windows)

## SDS Console Requirements (optional)

By default, SDS Console is installed on SDS Server, but you have the possibility to install it on another system which has access to SDS Server.

- ✓ CPU: 3GHz CPU with 2LB L2 cache
- ✓ RAM: 8GB min
- ✓ Storage: 250GB 7200 RPM Drive with 32MB Cache – recommended for performance and have room to export and import images
- ✓ Video card: Standard Video Card with at least 1024x768 resolution support - 256MB RAM
- ✓ Monitor: 24" monitor or larger recommended for production to allow better viewing systems remotely using the console.

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- ✓ OS: Windows 10 64Bit with Anti-Virus Software loaded

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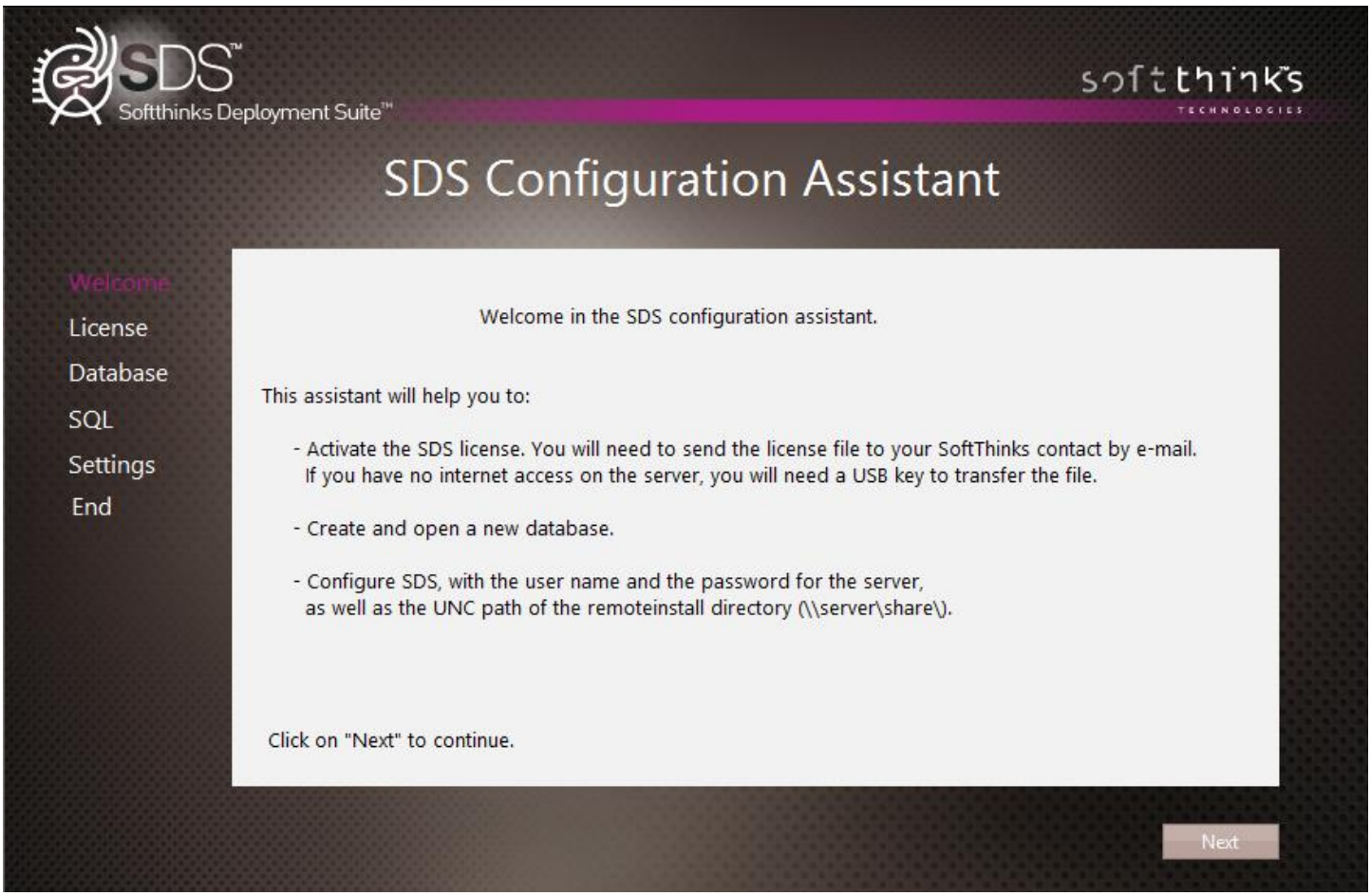
# SDS Installation

Once you have ensured that all the hardware and software prerequisites are matched, you can launch the SDS installer (setup.exe in the installation folder) and follow the on-screen steps.

At the end of the process, the SDS configuration wizard will be automatically launched.

# SDS Configuration and activation

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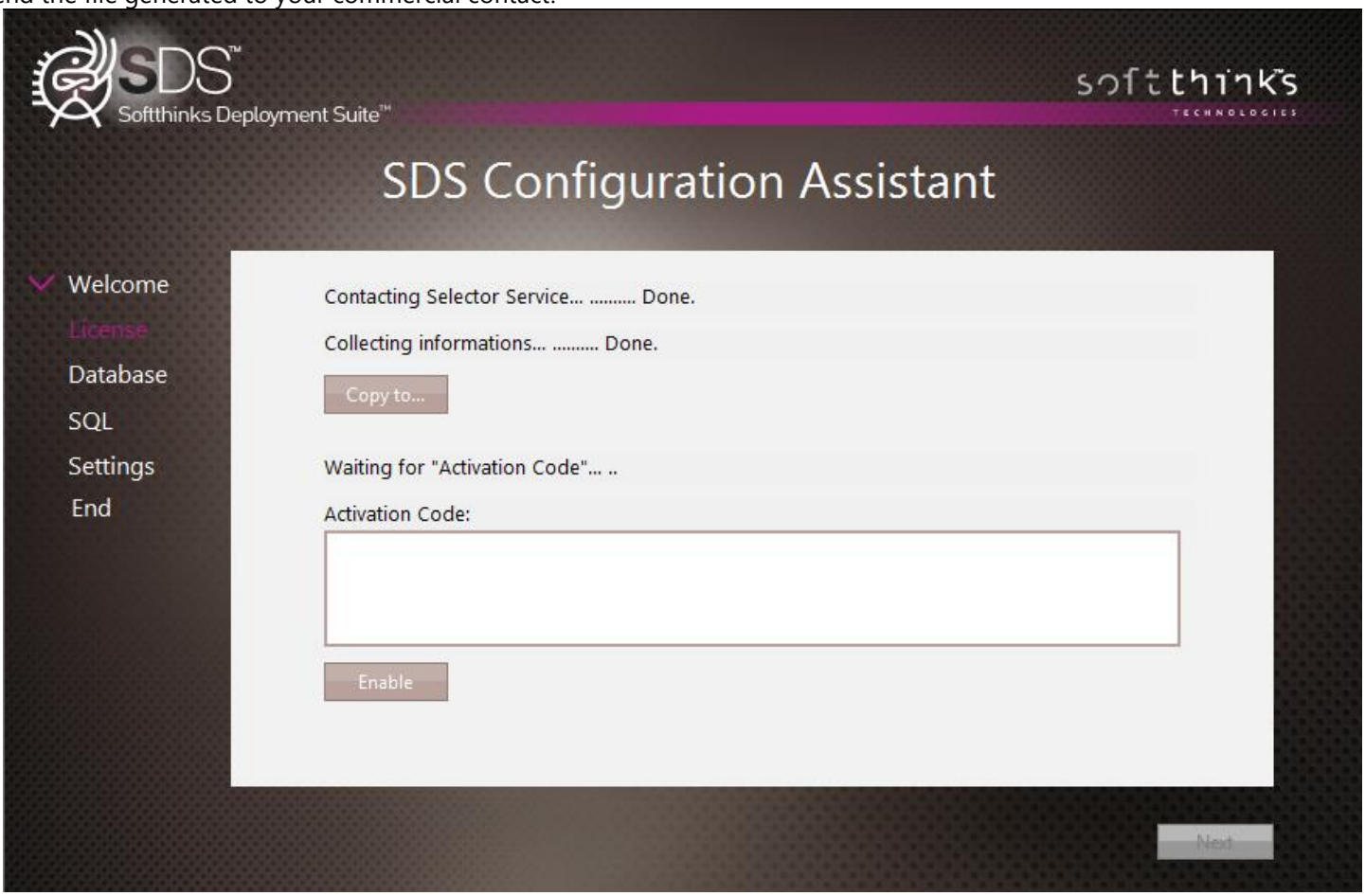
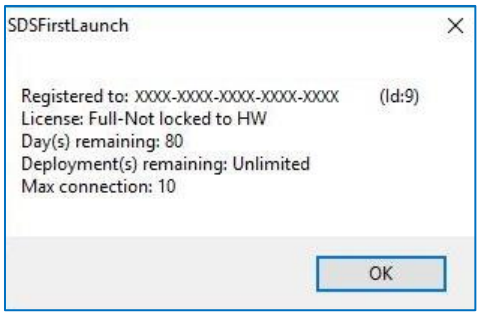
### License

Enter the activation code which has been provided to you. If you don't have it, please click on the button "Copy to..." and send the file generated to your commercial contact:




Once the activation code is successfully verified, a message box will indicate you that your product has been activated, as well as the license type, the days remaining, the deployments remaining, and the maximum number of simultaneous connections allowed:

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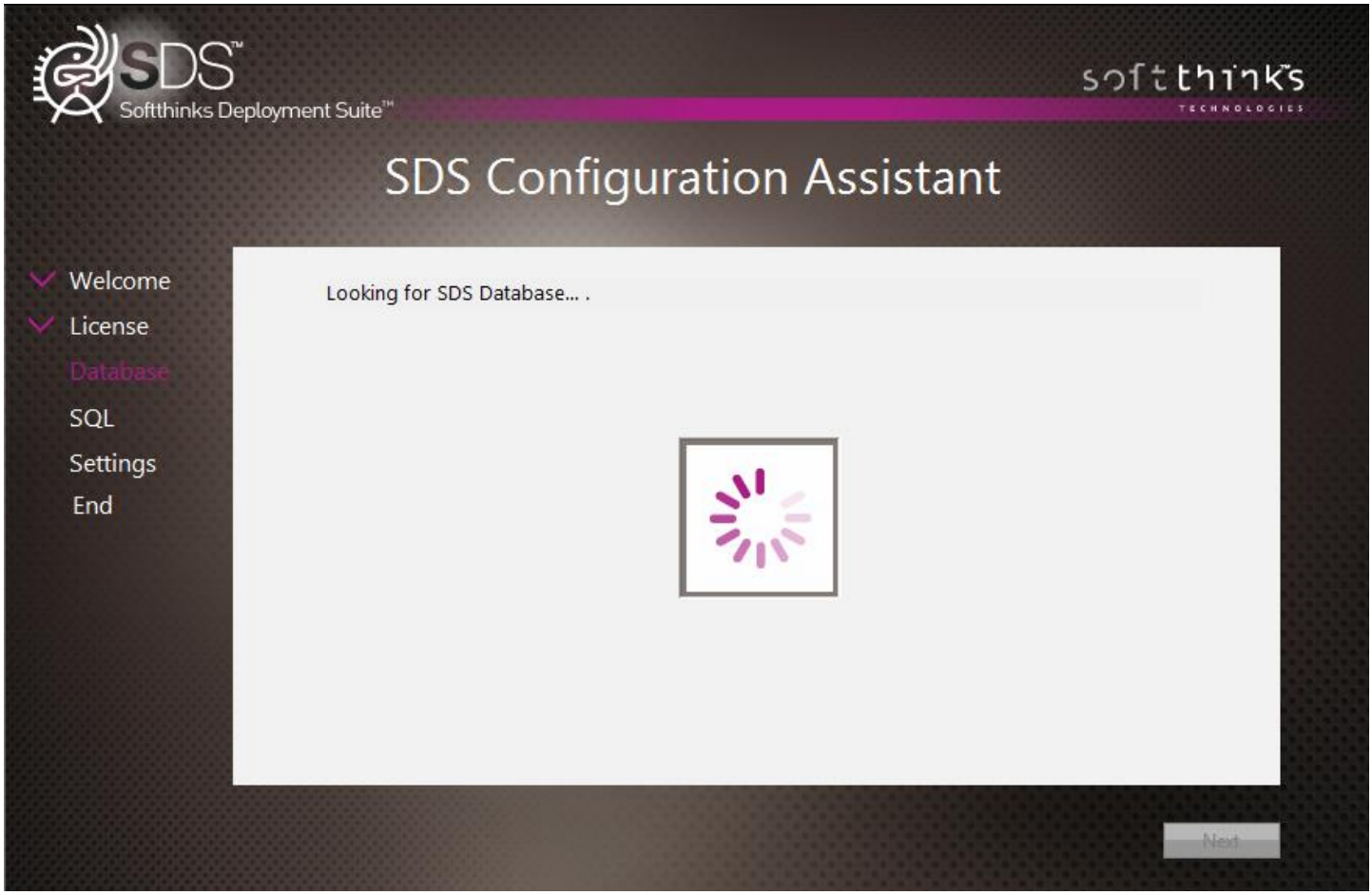
**Database**

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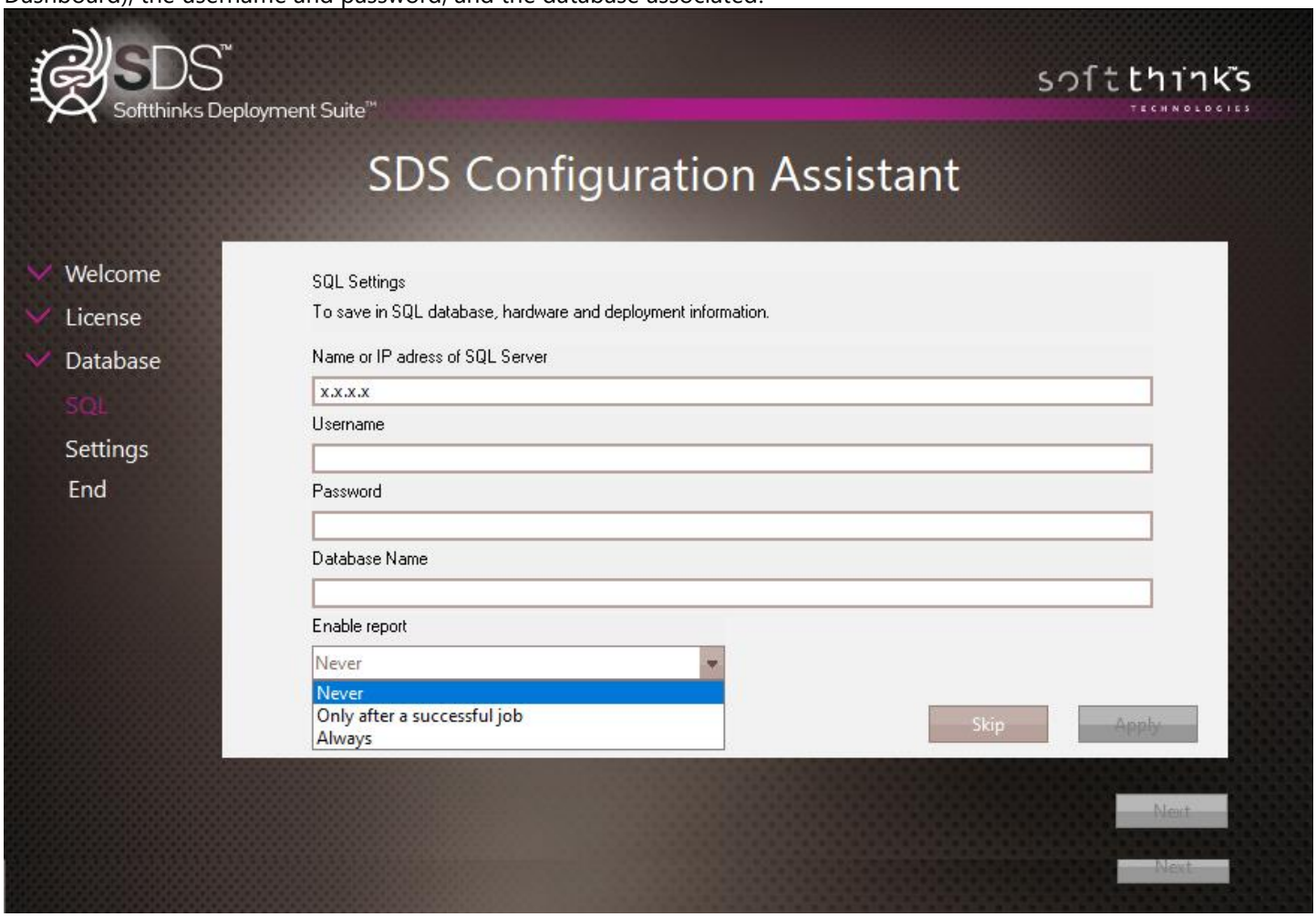
### SQL Configuration

Type the IP address of the server where you want to store the usage statistics (195.154.172.237 if you want to use SDS Dashboard), the username and password, and the database associated:




You can generate reports systematically, only in case of successful process or never. To learn more about all report types you can build, please see the dedicated chapter Reporting.

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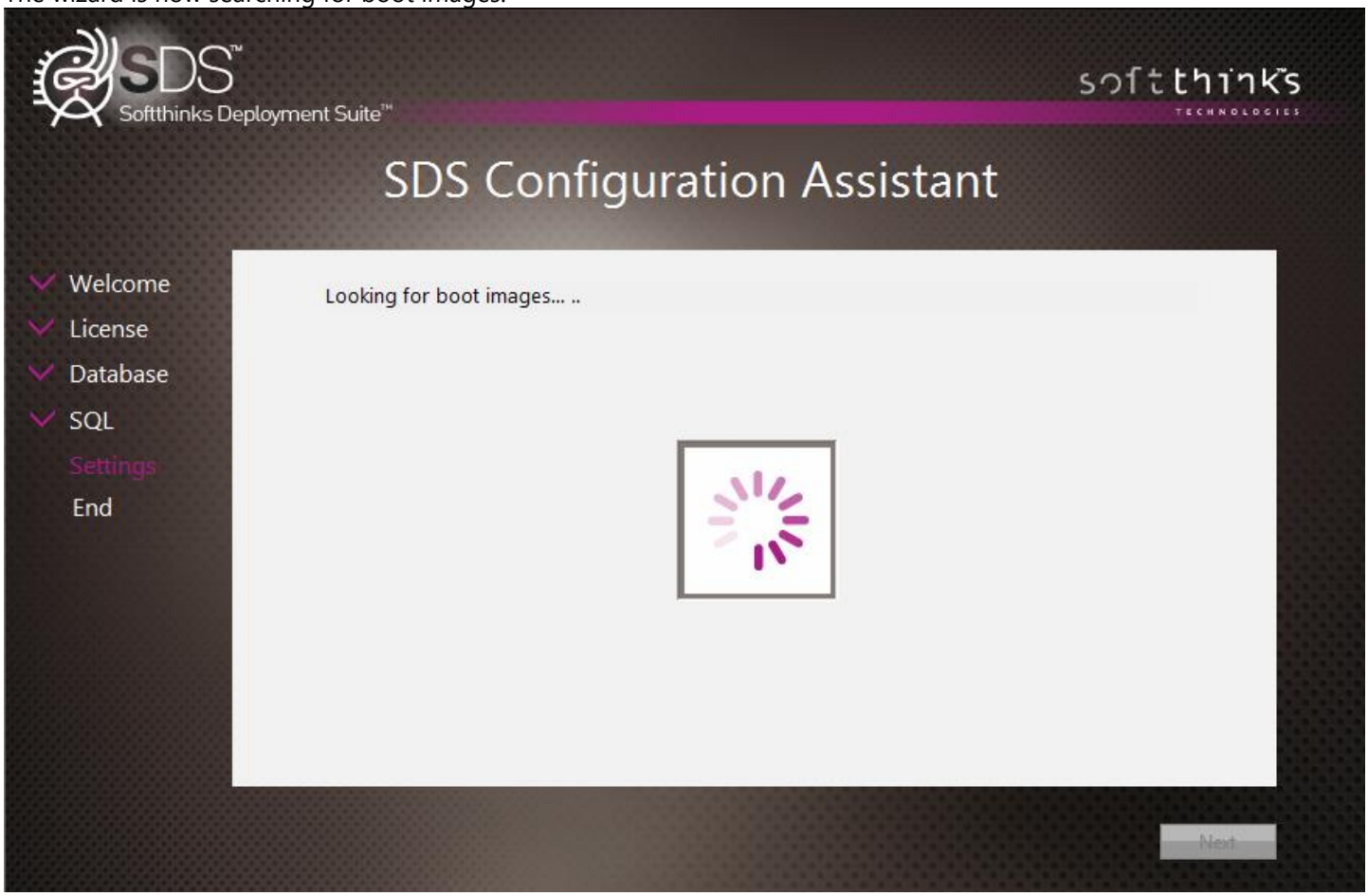
### Parameters

The wizard is now searching for boot images:

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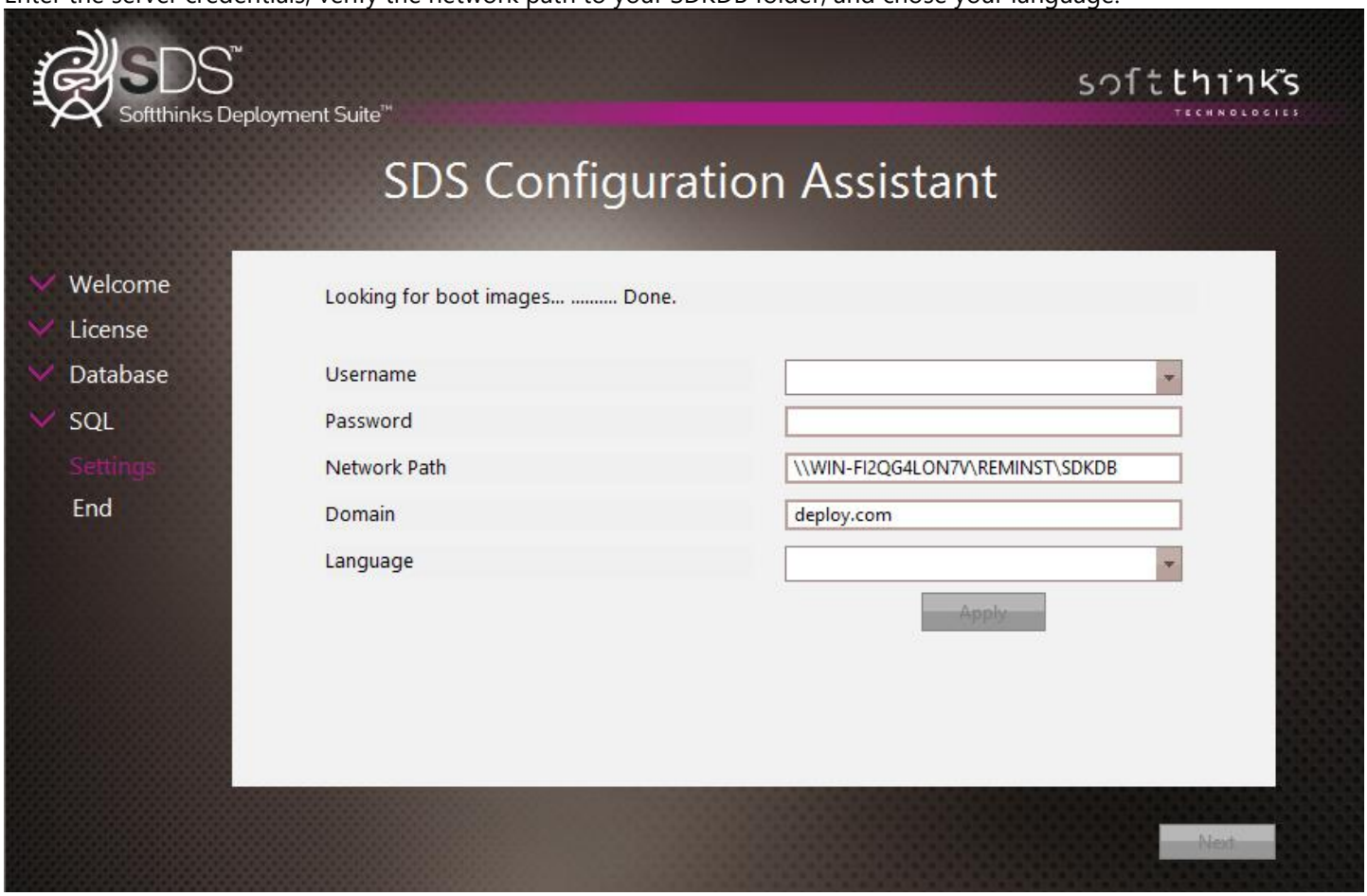
Enter the server credentials, verify the network path to your SDKDB folder, and chose your language:




Click on “Apply” to configure the boot images and then click on “Next”.

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After the installation is completed, the SDKDB Folder will be present in the D:\RemoteInstall Folder. The folders inside the SDKDB Folder and their purpose are listed below:

## General presentation of the folders composing the folder SDKDB

**The SDKDB folder is present in the folder specified during installation of the server version of SDS, the folders that compose it are the ones below :**

**ADF**: Automatic Deploy File

**APPS**: Folder containing the applications and informations about the software, in this folder, the folders APP00 *** are present (containing applications) and the DTA folder (file identification softwares).

**Bios**: Folder containing the Bios.

**Bootdisk**: Folder that allows the implementation of a recovery partition.

**Deploy / Deploy64**: Folder containing the files that will be used to deploy the images on the client. It contains the necessary files for the operation of SDS tools. There is a folder for 32-bit versions and one for 64bit.

**DIFF**: Folder containing the smartimages.

**DRV**: Folder containing the drivers. Subfolders in it are sorted by categories (USB, video, network, etc. ..).

**Env_files**: Specific folder for the OS.

**Hotline**: Folder containing the hotline tools.

**Presets**: Folder containing the deployment profiles (Hardware recognition).

**Profils**: Folder containing the profiles.

**Report**: Folder containing the report files on the client machine. (a report can be generated at the end of an operation performed by the server SDS).

**RIS**: Folder containing the images in various formats:

- Casper : SoftThinks™ method to capture file by file.
- VD : Sectorial method capture.
- Wim : Microsoft® method to capture file by file.

**Selector**: Folder containnig the license management.

**Temp**: Folder containing the log files.

**Update**: Folder containing the executable "asexec" (the software which will launch the setup at the boot).

You will find on your desktop a shortcut to the SDS administration console named « SDS Console »:

The SDS Console can also be installed on another PC through its standalone installer.

You will also notice a new icon in the systray area of the server taskbar which allow you to interact with a service called "Selector" ("SelectorSRV" or "SelectorSRV_X64" in the services list) which manages the license and the SDS SQL Database. Please see the dedicated chapter Interacting with Selector service on SDS Server to get more details.

Before processing any device, please ensure that SDS can join the SDS SQL DB. If it's not the case, you will see a warning overly on the systray icon: When you see this overlay icon, DO NOT restart/shutdown the server, or stop the service. We put in place a buffer in memory to manage short disconnections that we flush as soon as the connection is restored but if you restart/shutdown the server, all the operations made while the connection to the SQL Database was broken will be lost.

The SDS server is now ready to have any device booted to it.

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# Booting a device into SDS environment

## Windows / Linux Devices

The first step in the process for using SoftThinks Deployment Suite will be to PXE boot a unit (Laptop, Desktop or Server) to the SoftThinks Server. In order to do this, you will have to go to the unit's BIOS or Startup Menu and set or select Network Interface or NIC as the boot option.

You can also use a bootable USB stick as an alternative to PXE booting (See How to boot from Bootable USB Flash Drive with USB Ethernet adapter).

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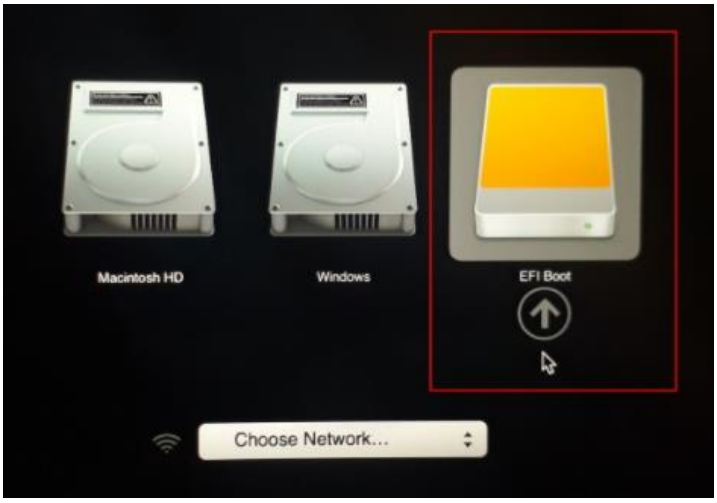
# macOS Devices

macOS devices can be booted only though a UEFI SDS USB Boot Stick.

### macOS devices without T2 chipset or with T2 disabled

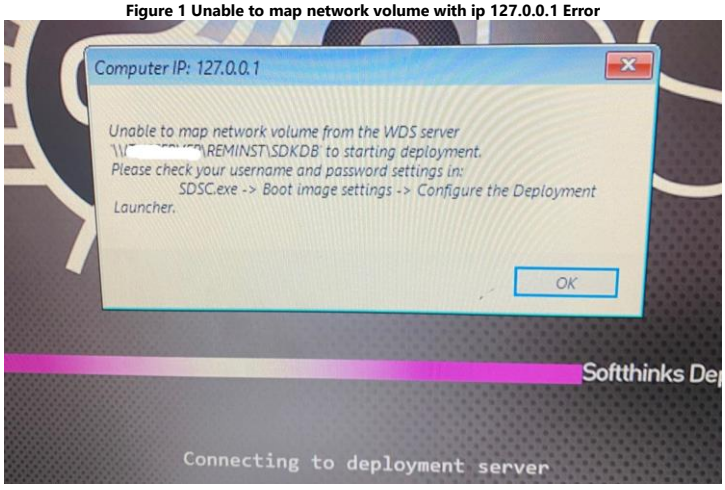
This will require a PC based USB Ethernet adapter (Not Apple) and an PXE_SDSC USB Drive. Please ensure that your USB Ethernet adapter is compatible with Apple devices (with REALTEK chipset for example).

1. When powering on the Apple without T2 or T2 disabled, press and hold the Command + R and the Apple boot menu will show:




2. Select EFI and it should load to the SDS Menu. If you are using an inexpensive USB ethernet adapter, sometimes these don't have native driver support in WinPE and will not work. You may get an error like the one below if the adapter doesn't have driver support for WinPE.

**Figure 1 Unable to map network volume with ip 127.0.0.1 Error**

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macOS devices with T2 chipset only (for imaging purpose please see macOS Image Preparation)

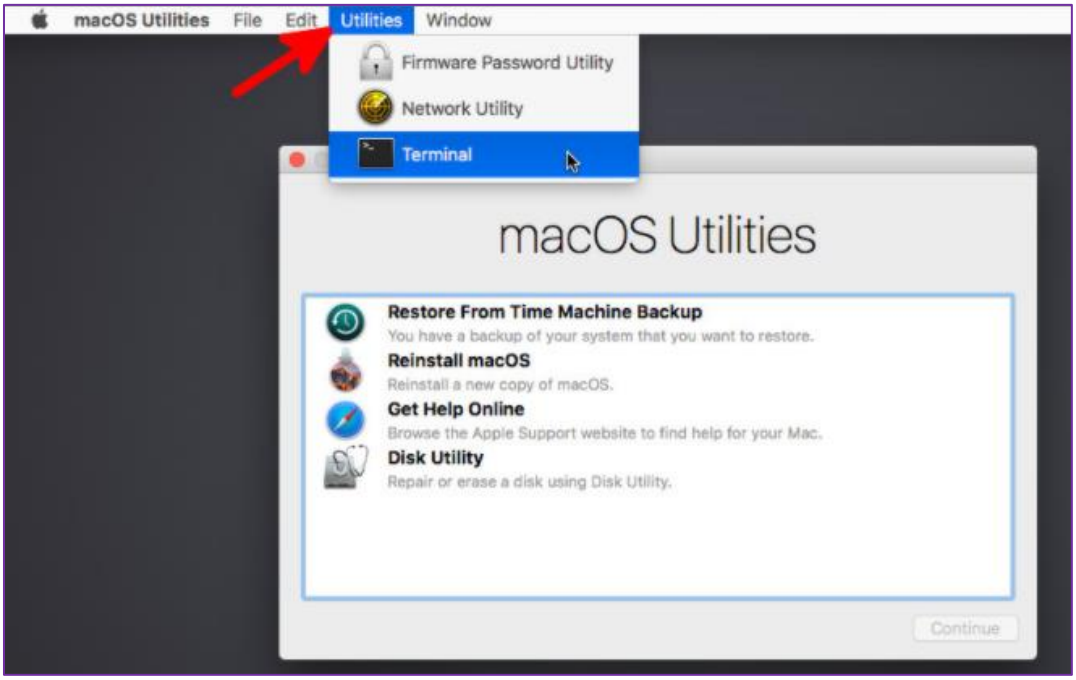
On macOS devices with T2 chipset, you could not boot from USB by default or boot from a windows device. For this you will need to use MAC Recovery and change boot options. To achieve this, you will need the administrator account from the OS version installed. Without it, user configuration is impossible to change those settings.

1. You have to boot in MAC Recovery with the appropriate macOS recovery:

   - **MacOS Recovery**
     Turn on your Mac and immediately press and hold these two keys: Command-R

   - **MacOS Recovery over Internet**
     Turn on your Mac and immediately press and hold one of the combinations
     - Option-Command-R
     - Shift-Option-Command-R

2. Once in recovery open a terminal:




3. Insert EUFI version of the SDS USB Boot Stick (PXE_SDSC) plugged in the USB port that also has the folder and files from the MACOS SUPPORT\T2 folder on your server.

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4. Get the first internal disk with EFI partition with DISKUTIL LIST command:

```
DISKTUTIL LIST
/dev/disk0 (disk image):
   #:                       TYPE NAME                    SIZE       IDENTIFIER
   0:      GUID_partition_scheme                        +2.1 GB     disk0
   1:                 Apple_HFS macOS Base System        2.0 GB     disk0s1

/dev/disk1 (internal, physical):
   #:                       TYPE NAME                    SIZE       IDENTIFIER
   0:    GUID_partition_scheme                          *500.3 GB   disk1
   1:                        EFI EFI                     314.6 MB   disk1s1
   2:               Apple_APFS Container disk 2          500.0 GB   disk1s2

/dev/disk2 (synthesized):
   #:                       TYPE NAME                    SIZE       IDENTIFIER
   0:    APFS_partition_scheme -                        +500.0 GB   disk2
                                Physical Store disk1s2
   1:             APFS_Volume Macintosh HD - Data       3.6 GB     disk2s1
   2:             APFS_Volume Macintosh HD - Data       737.3 KB   disk2s2
   3:             APFS_Volume Preboot                   79.4 MB    disk2s3
   4:             APFS_Volume Recovery                  528.9 MB   disk2s4
   5:             APFS_Volume VM                        1.1 GB     disk2s5
   6:             APFS_Volume Macintosh HD              11.1 GB    disk2s6
```

5. Move to the USB drive with the following command:

```
CD /Volumes/PXE_SDSC
```

6. Run the following command and substitute the “Disk0” with the disk you identified in step 2 above:

```
./ SDST2 -W1 -I disk0 -E
-- macOS SDS tool 1.2n SoftThinks 2022 --
-- Setup SoftThinks SDS Boot --
 Install external boot
 SDS Disk signature: d1187547
 Install boot files
 SoftThinks PXE device associated to this computer reboot and choose proper
device.
 Install done
```

7. Then remove USB device and reboot. The unit will start automatically to SDS. Now you can run all functions of SDS except image capture. If you need to capture an image from a MAC, please refer to macOS Image Preparation.

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# SDS Welcome Screen

Once the unit has booted you will see the SDS Welcome screen. This screen can be fully customized (See How to customize welcome menu).

Typical refurbishing Welcome Screen:

**Note:** This is just one of an almost unlimited number of configurations that are possible with the software. The Welcome Page can be modified to fit your specifications exactly to make it as easy as possible for your technicians.

From this Welcome Screen you can choose from: Audit/Diagnostics, Imaging, Repair, and Wipe Only

- **Audit/Diagnostics:**
  This selection brings you to a menu where you can select from: Audit Only, Audit with Diagnostics, and Audit with Diagnostics W/O HDD.

- **Imaging:**
  This selection brings you to a menu where you can select from: Create, Deploy/Wipe/Diagnostics, and Deploy Only

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- **Create:**
  This will take you Image Capture page and allow you to capture either a Windows Generic or a model specific Static Image for Windows or MAC.
- **Deploy/Wipe/Diagnostics:**
  This selection will take you through a series of screens to make your choices for deploying an image to a computer and do the diagnostics and hard drive wiping along with it.
- **Deploy Only:**
  This selection will take you through a series of screens to make your choices for deploying an image only.

- **Repair:**
  This selection brings you to a menu where you can select from: Auto-Repair, Smart Repair, Hardware Check and OS Tools.
  - **Auto-Repair:**
    Will attempt to fix boot issues of a computer, if that fails it will prompt you to back up the user's data, reimage the computer, and then restore the user's data.
  - **Smart Repair:**
    Will attempt to fix the boot issues of a computer.
  - **Hardware Check:**
    Gives you the options to check various systems of the computer.
  - **OS Tools:**
    This selection brings you to a menu where you can select from: Un-delete, Create Migration and data backup, and Apply Migration and data backup.
    - **Undelete:**
      Allows you to restore a previously deleted file or folder.
    - **Create Migration and data backup:**
      Will allow you to create a backup of a user's files and settings
    - **Apply Migration and data backup:**
      Will restore a previously created backup to a user's computer.
- **Wipe Only:**
  This selection brings you to a menu where you can select from: Wipe – 1 Pass, Wipe – 1 Pass with Diagnostics, Wipe – 3 Pass, Wipe 3 – Pass with Diagnostics.
    - **Wipe – 1 Pass:**
      Allows you perform SoftThinks Adisa Certified Basic 0 Wipe on any hard drive found in a computer, server, or wipe-array.
    - **Wipe – 1 Pass with Diagnostics:**
      Allows you perform SoftThinks Adisa Certified Basic 0 Wipe on any hard drive found in a computer, server, or wipe-array, and do the diagnostics of the hard drive(s) and the hardware of the computer that it is in.
    - **Wipe – 3 Pass:**
      Allows you to perform the U.S. Standard, DoD 5220.22-M 3-Pass Wipe on any hard drive found in a computer, server, or wipe-array.
    - **Wipe – 3 Pass with Diagnostics:**
      Allows you to perform the U.S. Standard, DoD 5220.22-M 3-Pass Wipe on any hard drive found in a computer, server, or wipe-array, do the diagnostics of the hard drive(s) and the hardware of the computer that it is in.

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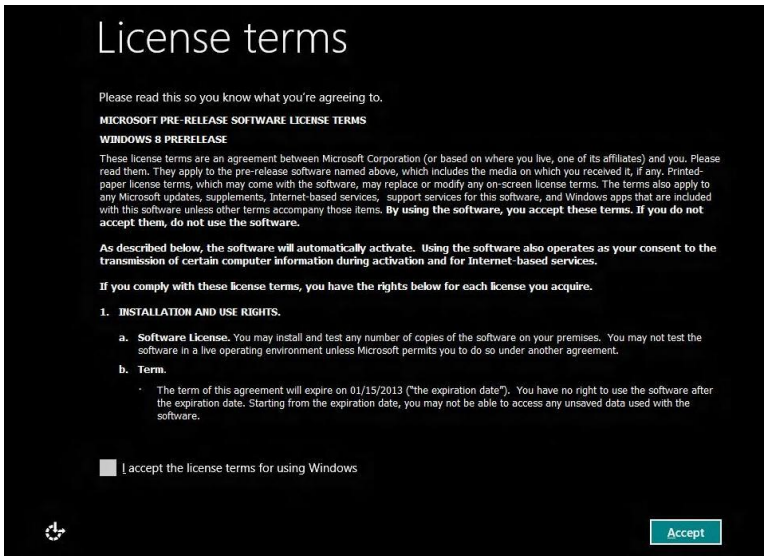
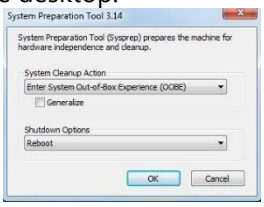
# Preparing an image

## Static Windows Image preparation (Factory Image)

1. Reload a known good system completely via factory recovery discs, recovery partition, or new in the box – power on/reboot and let the unpacking process proceed to Windows welcome / license screen (might defer depending on Windows version):




2. While in this screen, press simultaneously SHFT+F10 and a command prompt will appear. Go to the C:\Windows\Panther directory and check to see if there is a unattend.xml or an unattend folder. If there is rename them to unattend_bak.xml and unattend_bak respectively. Exit the command prompt after checking the panther folder. At this point, simultaneously press SHFT+CRTL+F3 (You may need to press the Fn key as well for the Function Keys depending on the system). The system will proceed to reboot into MS Windows Audit Mode and System Preparation Tool (« Sysprep ») will appear on the desktop:




If you receive an error message (below) when attempting to go to Audit mode, you will need to follow these steps :

a. Press the keys SHIFT+F10 to open a command prompt.
b. Change the directory to C:\Windows\System32\Sysprep and run the sysprep.exe.
c. Choose the option for Enter System Out-of-box Experience (OOBE).
d. Leave the generalize box empty and select OK. The system will reboot to the OOBE screen. You will need to complete OOBE at this point.
e. Once you are in user mode, to the C:\Windows\System32\Sysprep directory again and run Sysprep.exe.
f. Select "System Enter Audit Mode" and again leave the generalize box empty.
g. Select OK and it should reboot into Audit mode at this point.
h. Open Control Panel, User Accounts and delete the user you created during OOBE process. Make sure to delete the user data as well.
i. Now the system should stay in OOBE mode.

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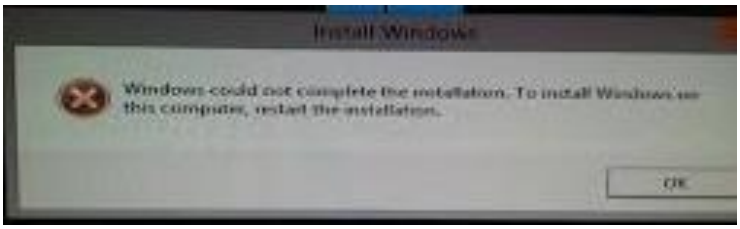
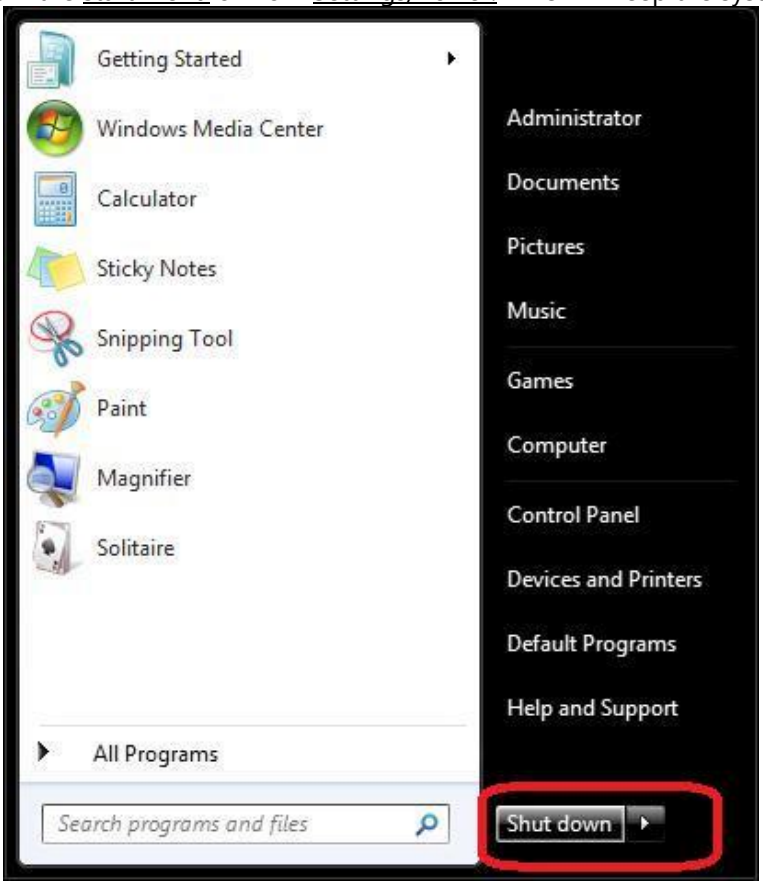



3. Close the sysprep Windows by using the "X" in the corner. Open a command prompt and run the command "slmgr /upk". The command will clear the current product key from the registry and inactivate Windows. Shutdown system from the start menu or from Settings/Power. This will keep the system in Audit Mode.



**Note:** Do not use the SYSPREP tool.

4. The image is ready to be captured. Please follow the steps in the *Image Capture Section*.

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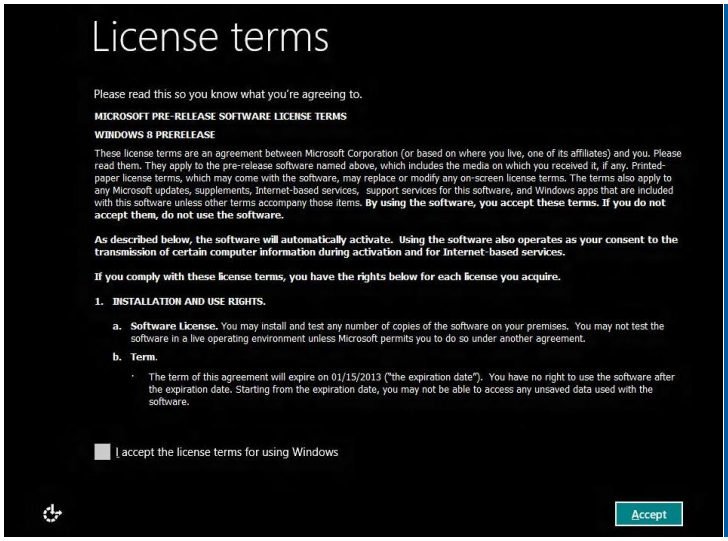
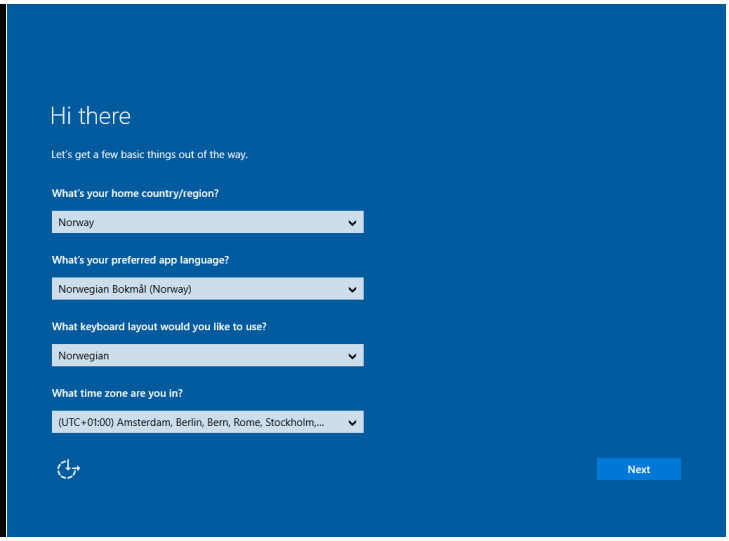
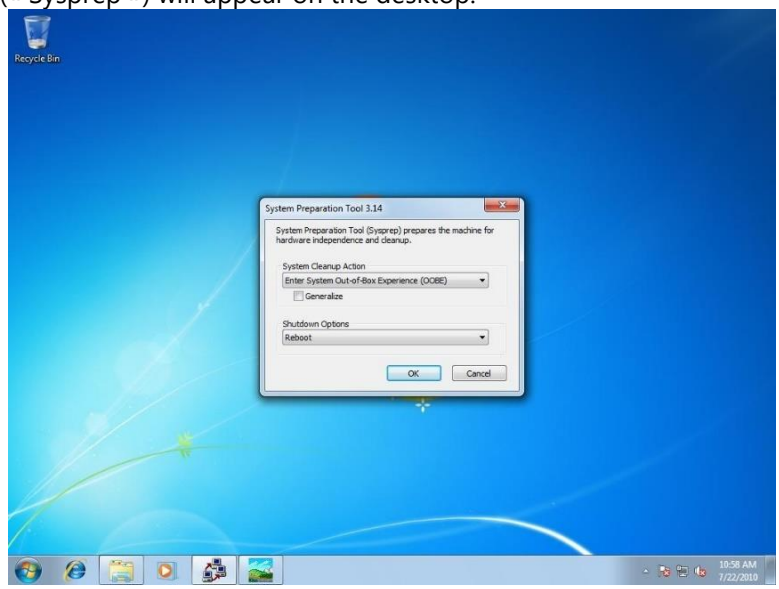
# Generic Windows Image preparation

1. Reload a known good system completely via Windows install media. After installation is complete, it should be at the Windows License screen / OOBE welcome screen:




2. Enter in Audit mode by simultaneously pressing CTRL+SHFT+F3 (you may need to press the Fn key as well for the Function Keys depending on the system). The system will proceed to reboot into MS Windows Audit Mode and the System Preparation Tool (« Sysprep ») will appear on the desktop:




3. At this point, you can install Windows Updates or any other applications you want added to the image. For Windows 7, you can use Windows updates to update the operating system. For Windows 8 and 10, you would have to use PowerShell to update the operating system.

   **Note:** Only install applications that should be a part of the base image, and so pushed to every device deployed with this image (ex: Microsoft Office, Anti-virus programs, etc…). Applications that would need to be installed as part of a special order can be deployed during the deployment process.

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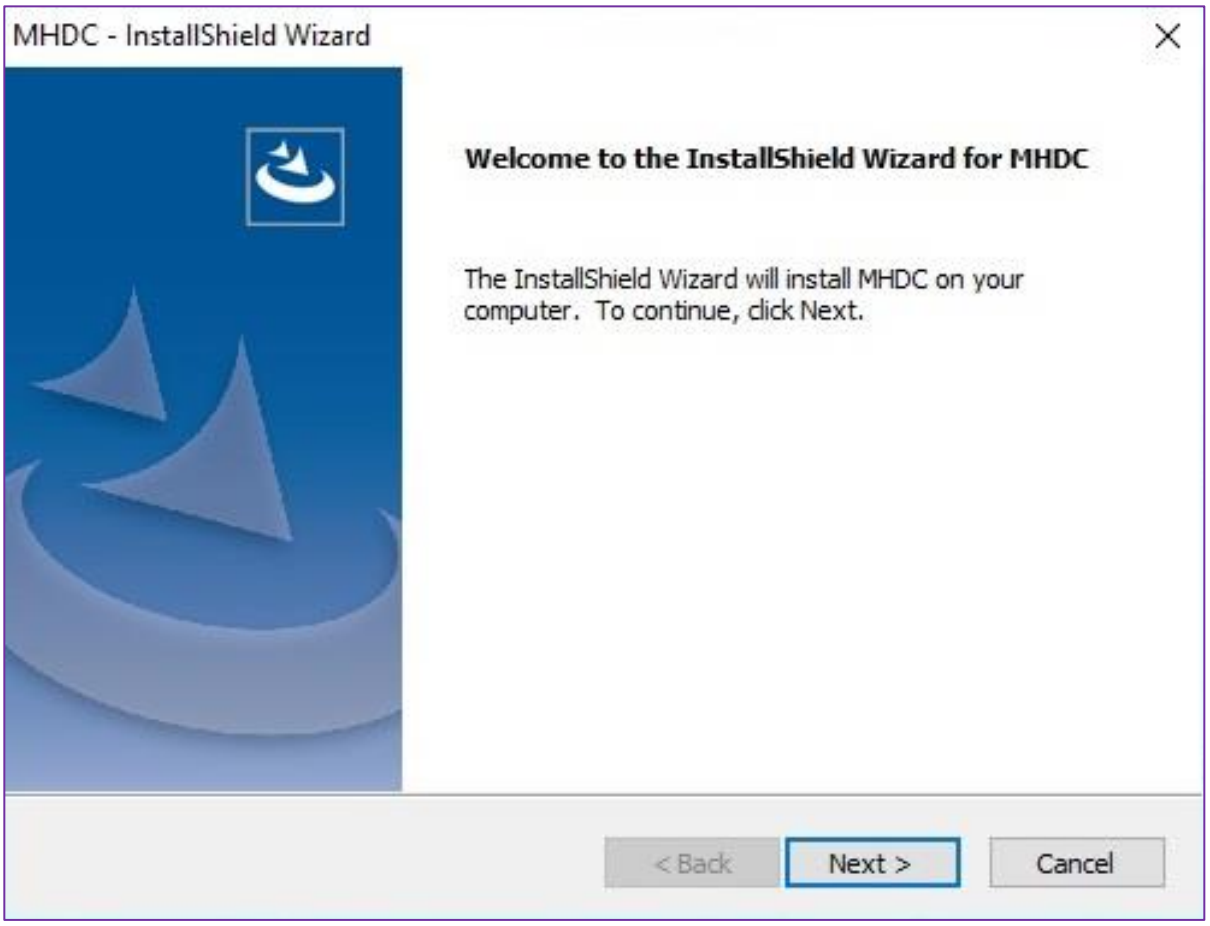
4. Since the OS has been updated and the necessary applications are installed, the system is ready to have Master Hard Disk Creator (SoftThinks provided software for Generic Image preparation) installed. Follow the prompts to install and run it to begin the process. At the end, the system will be shut down:



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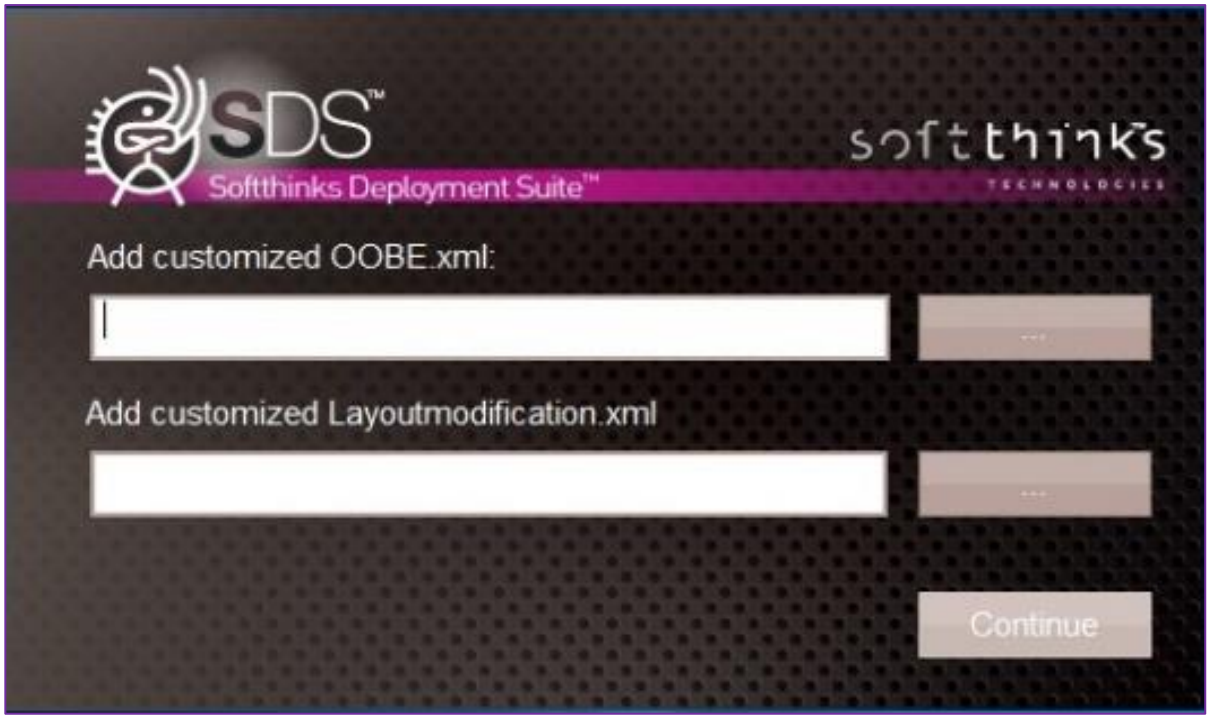


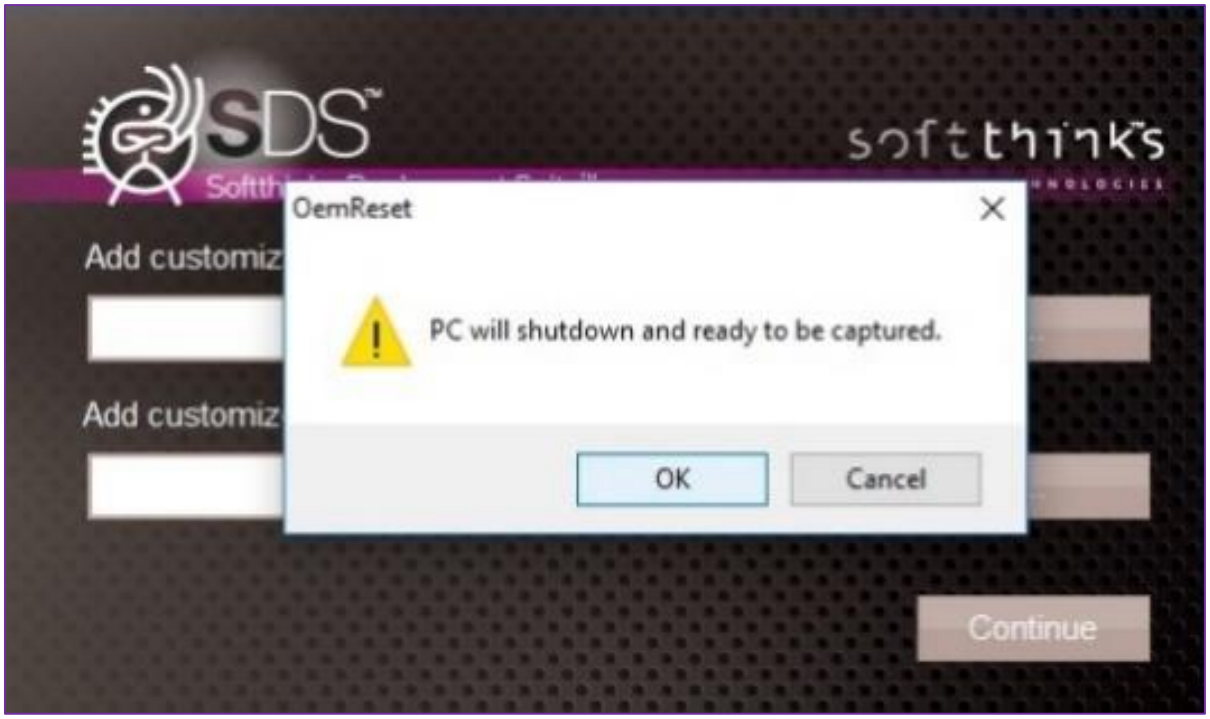


**Note:** You have to provide your own unattend.xml to fully configure your image (by default, all localization parameters are set to EN-US).

5. The image is now ready to be captured, please follow the steps in the image capture section.

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# Static Windows Image built from a Generic preparation

1. Deploy the required Windows Image to a known good system. During the deployment process, install **SoftThinks Backup and Recovery** (SoftThinks provided Recovery Solution software) if needed. The Image should be configured exactly how you would want it deployed for the final version.

2. Once the image has been deployed to the system, verify that everything is installed as requested and that drivers have been installed. Also verify that the recovery is working as expected.

3. Once everything has been verified, shut down the system using normal Windows functions. Do not use the OEMReset that is showing in the right corner of the screen.

4. The image is ready to be captured, please follow the steps in the image capture section.

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# macOS Image Preparation

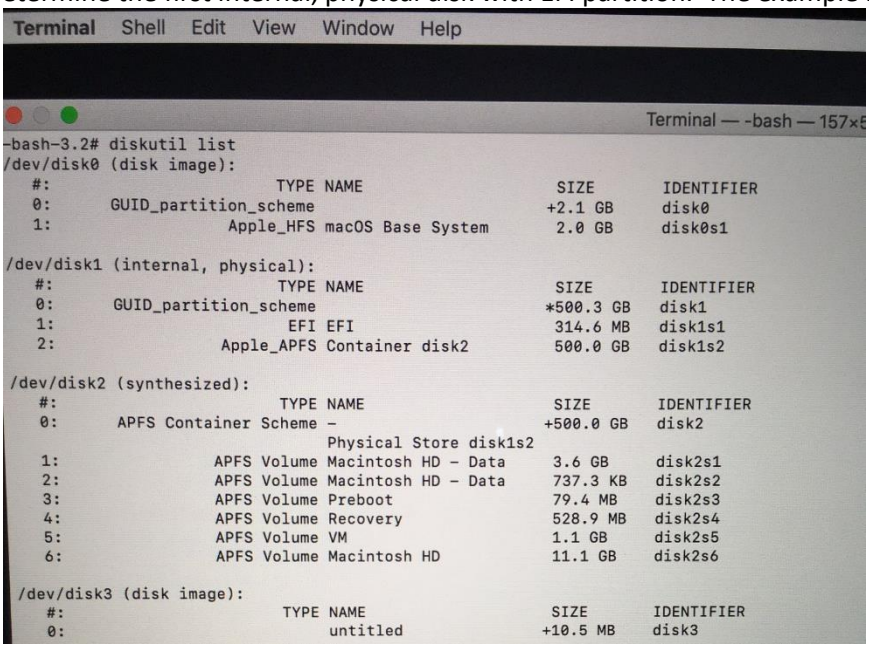
## Setup Recovery over Internet

Preliminary steps for macOS devices with T2 chipset only

You need to boot in recovery mode to install the EUFI PXE SDS device to your disk without changing disk topology. This will instruct the mac to support booting from the specific USB Drive used in the steps below as a supported external boot device. Once installed you use only this device, it will be dedicated to the macOS device where you install it. A USB device could be associated to several Apple computer.

8. Insert EUFI version of the SDS USB Boot Stick (PXE_SDSC) plugged in the USB port that also has the folder and files from the MACOS SUPPORT\T2 folder on your server.

9. Run **DISKUTIL** list to determine the first internal, physical disk with EFI partition. The example below would be disk1




10. Move to the USB drive with the following command:

```
cd /Volumes/PXE_SDSC
```

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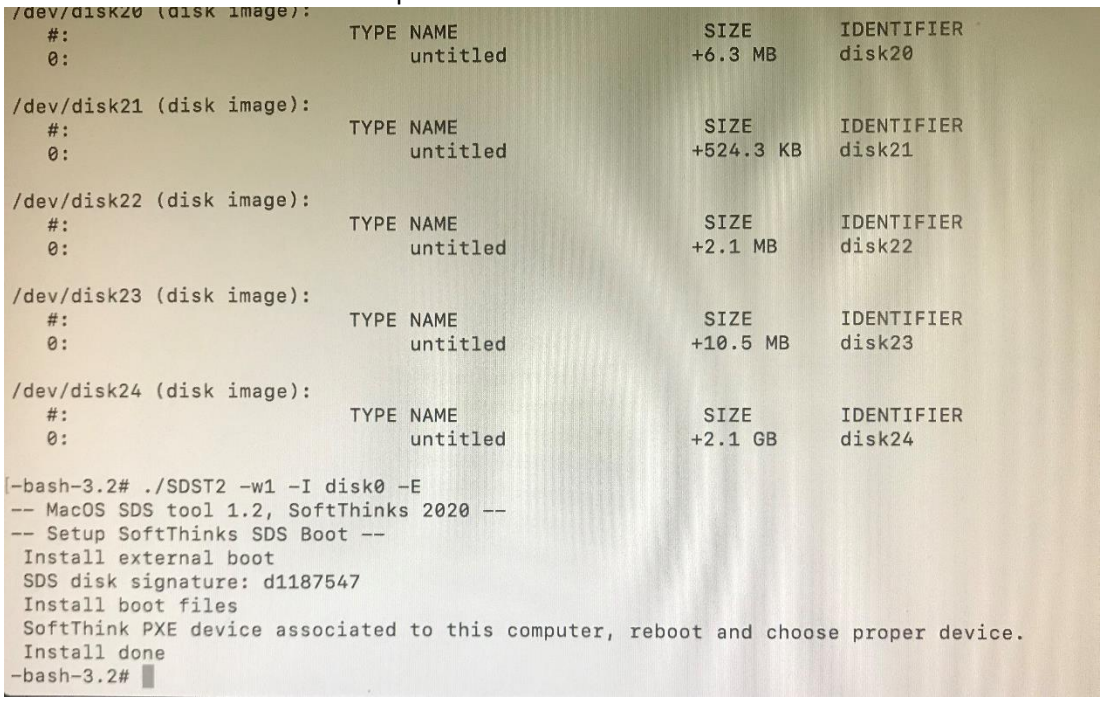
11. Run the following command and substitute the “Disk0” with the disk you identified in step 2 above:

```
./SDST2 -W1 -I disk0 -E
```

This will install our solution into EFI boot partition from disk0 and use External method.




12. Once installed, reboot the computer, leaving the USB disk device connected.

13. When you hear the startup chime, follow the steps common to all x86 devices below

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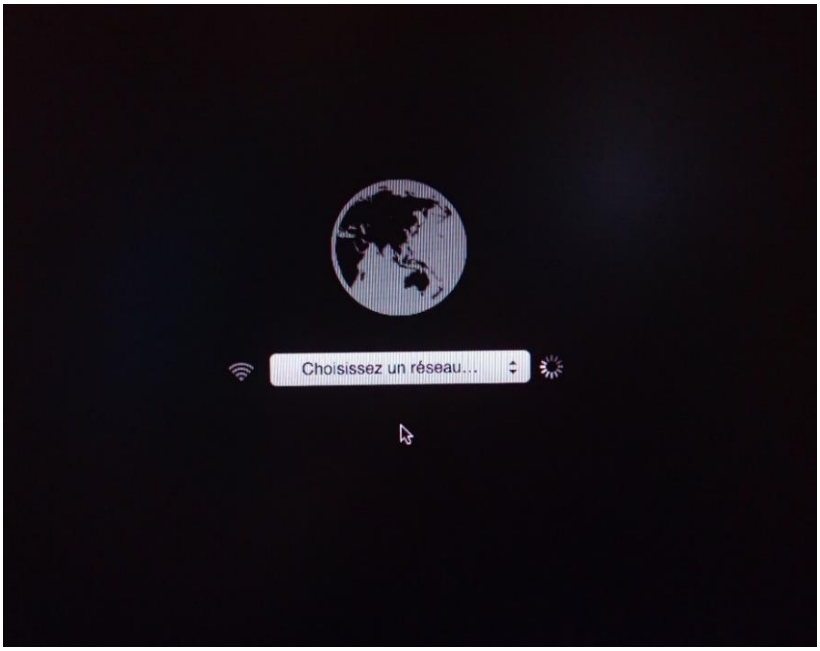
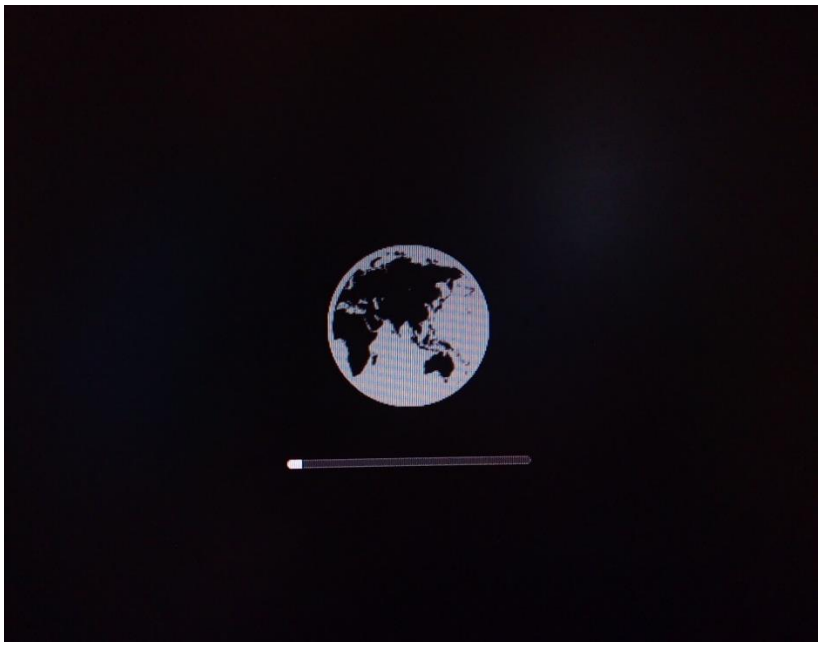
Steps common to all x86 macOS devices (with or without T2 chipset)

1. Boot the Mac in recovery mode: Press Option-Command-R or Shift-Option-Command-R, or press the option to display boot menu. Sometimes the internet recovery is displayed natively, depending on the BIOS.

2. Choose a Wi-Fi hotspot or plug in a network cable to initiate the recovery:




3. It will immediately start to download the recovery program:



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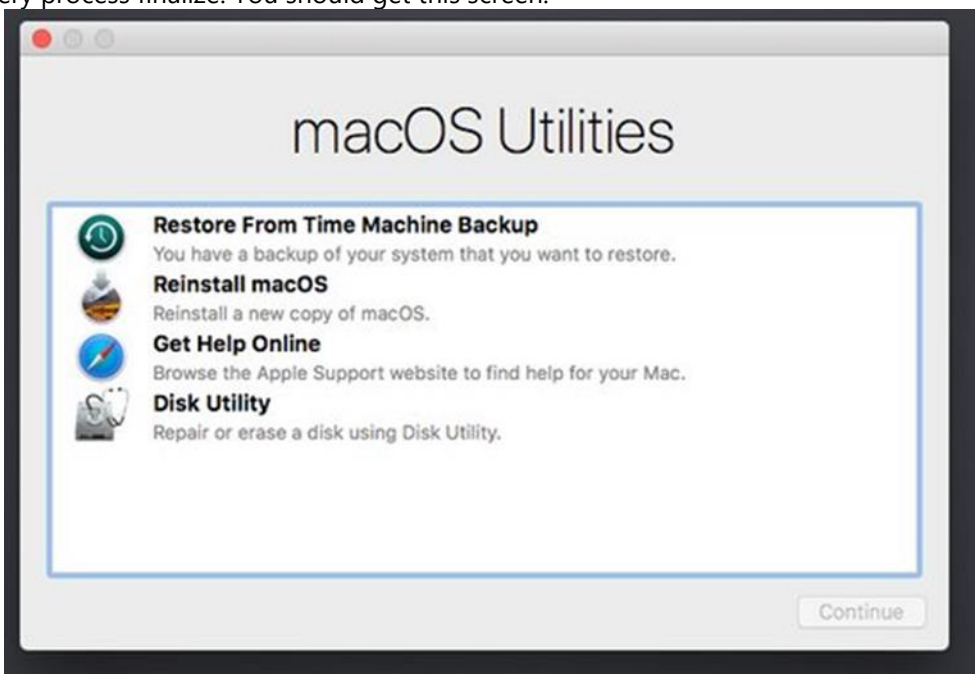
4. Let the recovery process finalize. You should get this screen:

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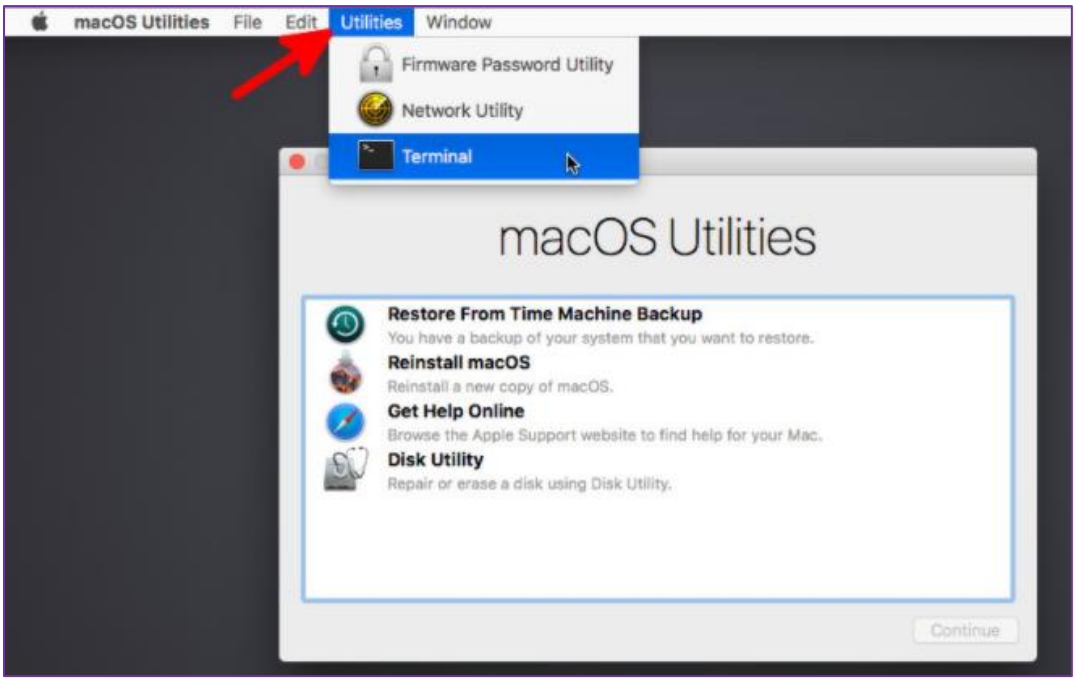
### Partition the macOS system disk

5. Launch the Terminal from the "`Utilities`" menu:




6. Plug a SDS PXE USB boot drive with EFI support made from the SDS console, with a copy of the partitionDisk.sh script and the resize script & app copied directly to the drive main directory. partitionDisk.sh is the script file you will use to format the drive to prepare for image capture. The resize script and app will later be installed to expand the partition(s) for after deployment.

partitionDisk.sh

7. Navigate to the SDS PXE boot drive plugged (PCE_SDSC USB DRIVE):

```
cd /Volumes/PXE_SDSC/
```

8. Execute the partitioning script to setup the system disk size (we recommend setting the size to 32GB for the sole purpose of using the minimum size needed to load MacOS and in turn reduce the time it takes to deploy the image), depending on the drive type:
   - For a [APFS] single disk

```
./partitionDisk.sh -single[apfs] 32 "Mac OS X" 1
```

   - For a [APFS] Fusion drive (each disk will be setup with 32GB, so the logical container will be 64GB, but it does not matter since the 2 disks will be captured)

```
./partitionDisk.sh -fusion[apfs] 32 "Mac OS X" 2
```

**Note:** You can create two images on a Mac with Fusion Drive:
1. One with the fusion drive (2 disks) to deploy on Macs with Fusion Drive
2. One with only the first disk (SSD) to deploy on Macs without Fusion Drive

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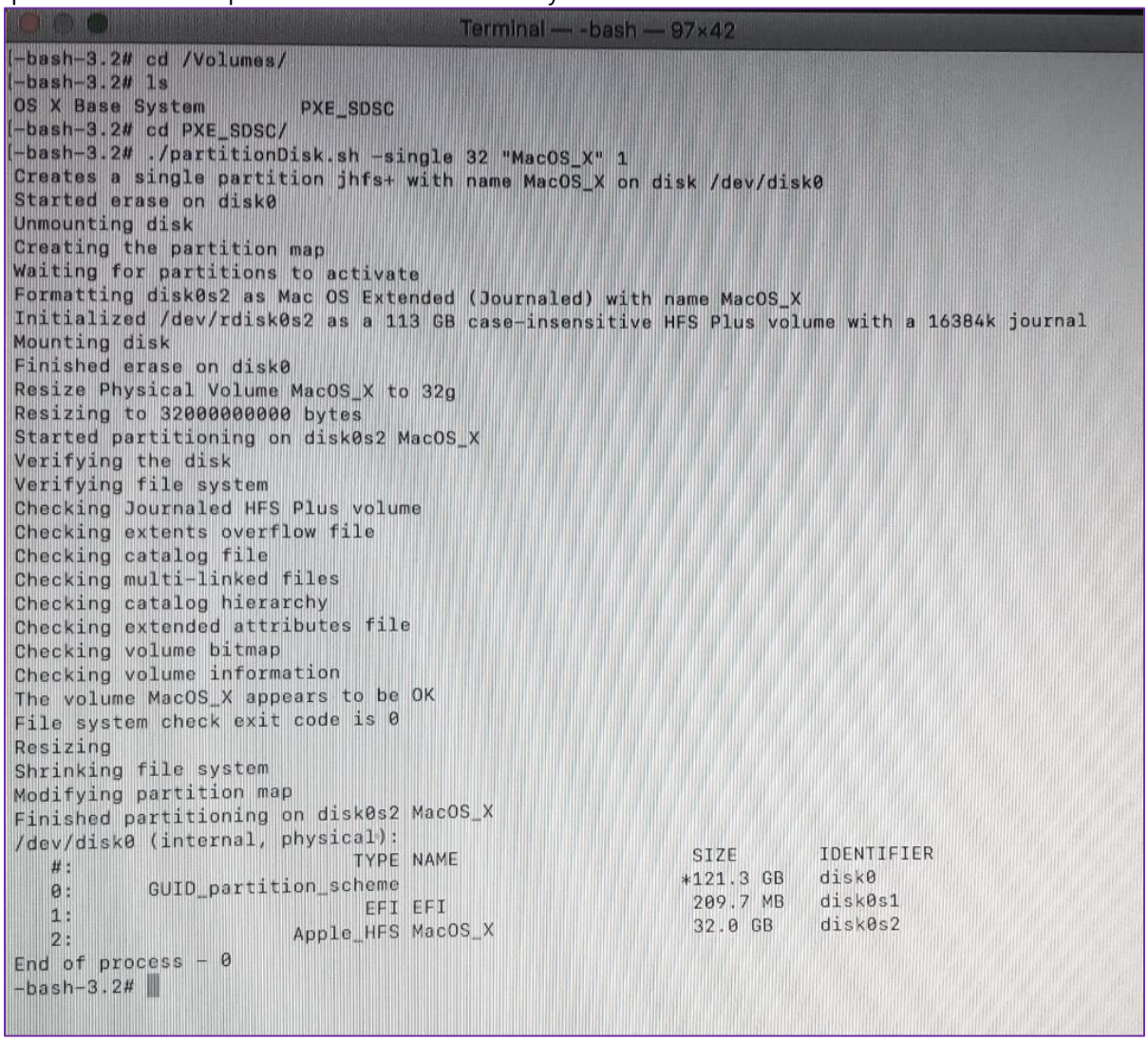
9. The partitionDisk.sh script will create the volume for you:

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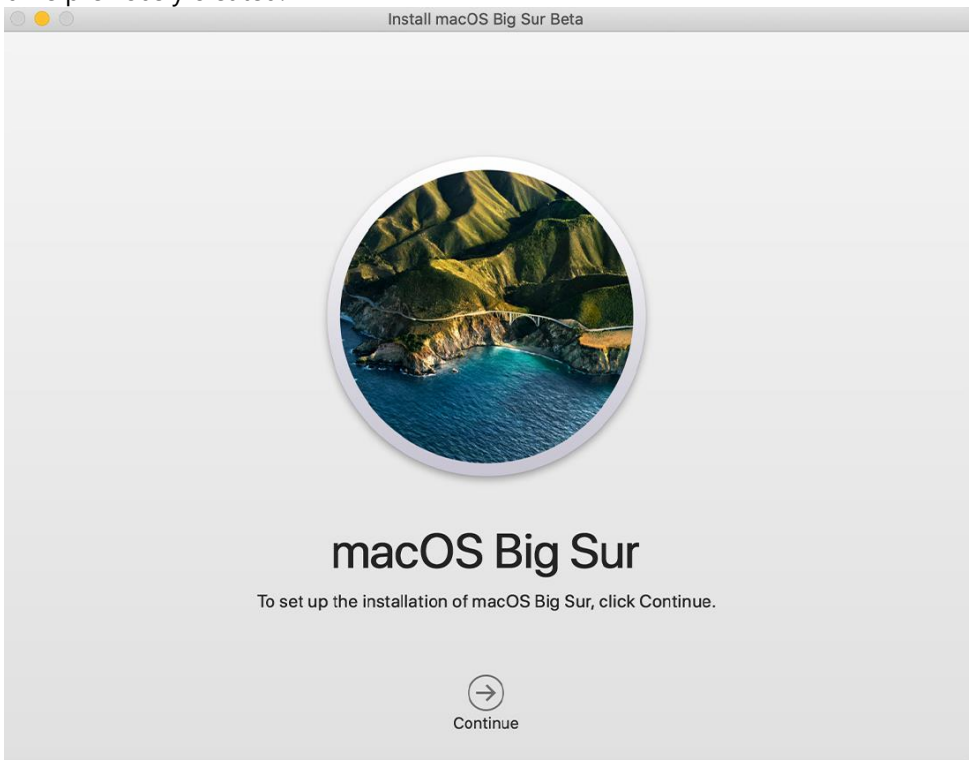
### Install macOS

10. Select the option to reinstall:

11. Select the volume previously created:

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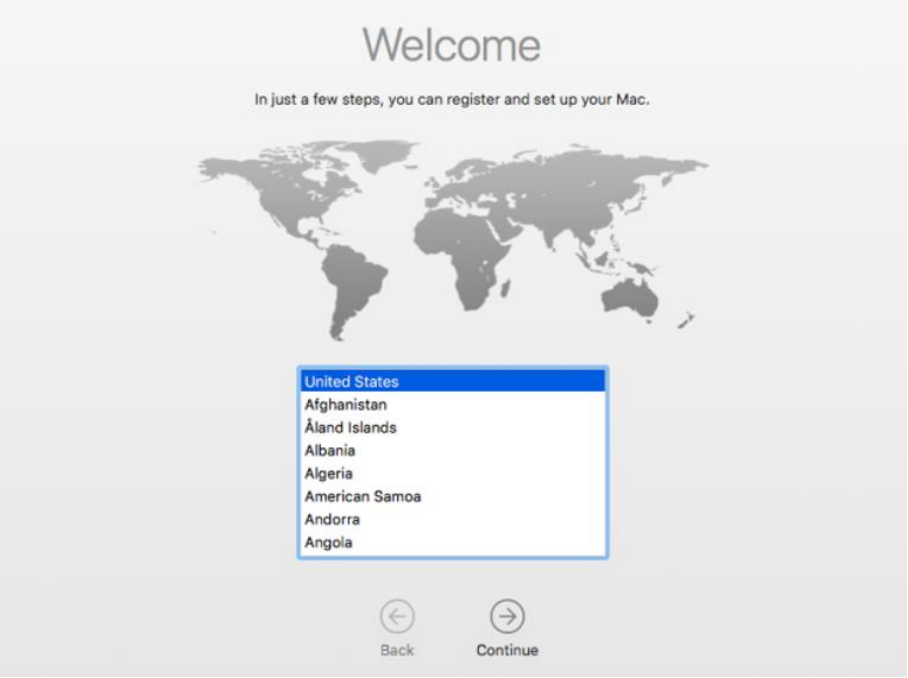
12. After several minutes or hours, depending on your connection speed (about 5GB to download), the computer will stop at the screen below. This is the setup assistant. DO NOT CONTINUE this assistant at this point but rather shut down the MAC or you will need to redo this process in its entirety from beginning.

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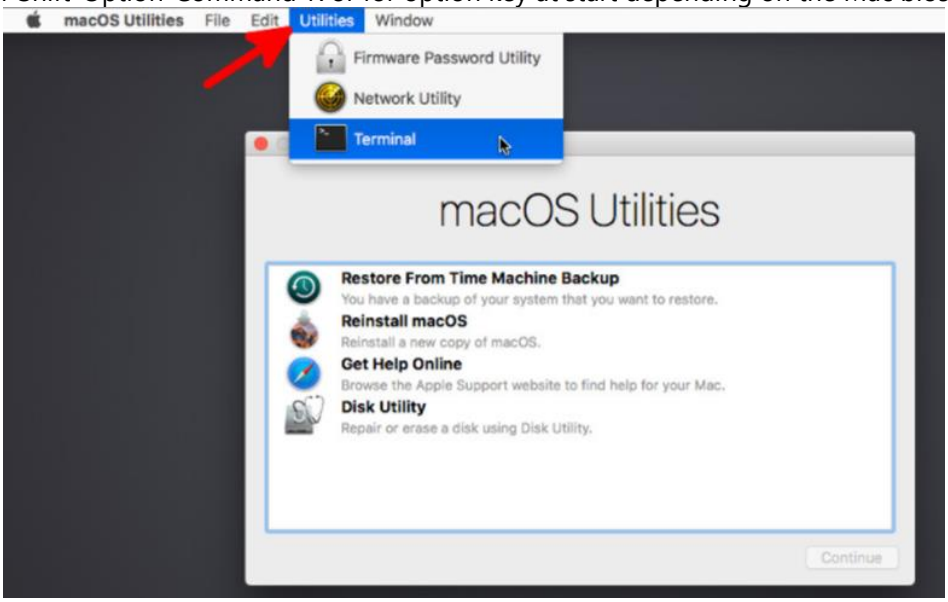
### Resize macOS partition

13. To complete the master creation, we need to install the resizing app & script. So, reboot to recovery (Option-Command-R or Shift-Option-Command-R or for option key at start depending on the Mac bios) and open a Terminal:




14. Execute the install.sh script from the "Resize" folder you had previously extracted from the archive below to your SDS PXE boot key:

Resize.zip

```
cd /Volumes/PXE_SDSC/RESIZE/
./Install.sh
```

15. The script will copy the Automator com.softthinks.resize.app onto the Mac OS System Volume and install the service com.softthinks.resize.plist, which will be started automatically after the first setup assistant to resize the drive, when the image is first booted.

16. Now switch off the Mac, the image preparation is done.

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# Linux Image Preparation

We recommend you to wipe completely your disk before installing Linux.

SDS 18.0 has been validated with the following Linux distributions (default disk layout and filesystem):

- Ubuntu 16.04.4 LTS (x64)
- Mint 18.2 Sonya (x64)

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# Capturing an image

## Windows Image

1. PXE boot the computer to the SDS server (If needed, enable BIOS network boot option) or use bootable USB Flash drive with USB Ethernet adapter (See How to boot from Bootable USB Flash Drive with USB Ethernet adapter).
2. From the Welcome screen, select "Imaging" then on the next page select "Create Image".
3. In the menu screen,
    a. Select the "Create new deployment image" option a (the radio button will turn from grey to white)
    b. Enter a description for the image b (there is no naming convention required).
    c. Check the option "Capture all kinds of volumes even if it is a Softthinks Recovery Partition" c to create a **Static Image** or uncheck it for a **Generic Image**
    d. Select your compression format d (WIM is the default format, and the only one possible for **Generic Image**)
    e. Set the split size e to "No split" (except if you want to put the image on optical media)
    f. Click on the Next button f

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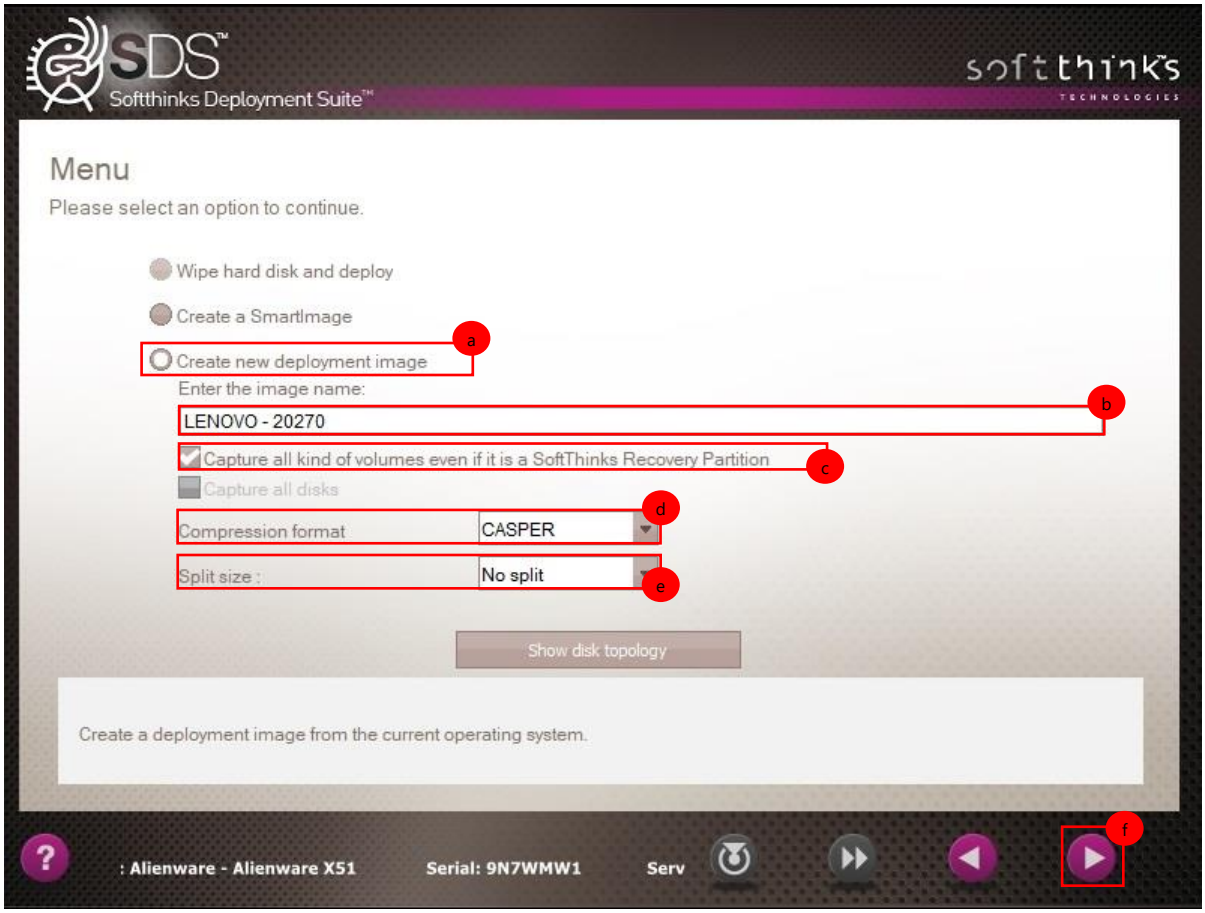


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4. The image capture will proceed automatically (screens may differ):

**Note:** If there is any failure, the process will stop.

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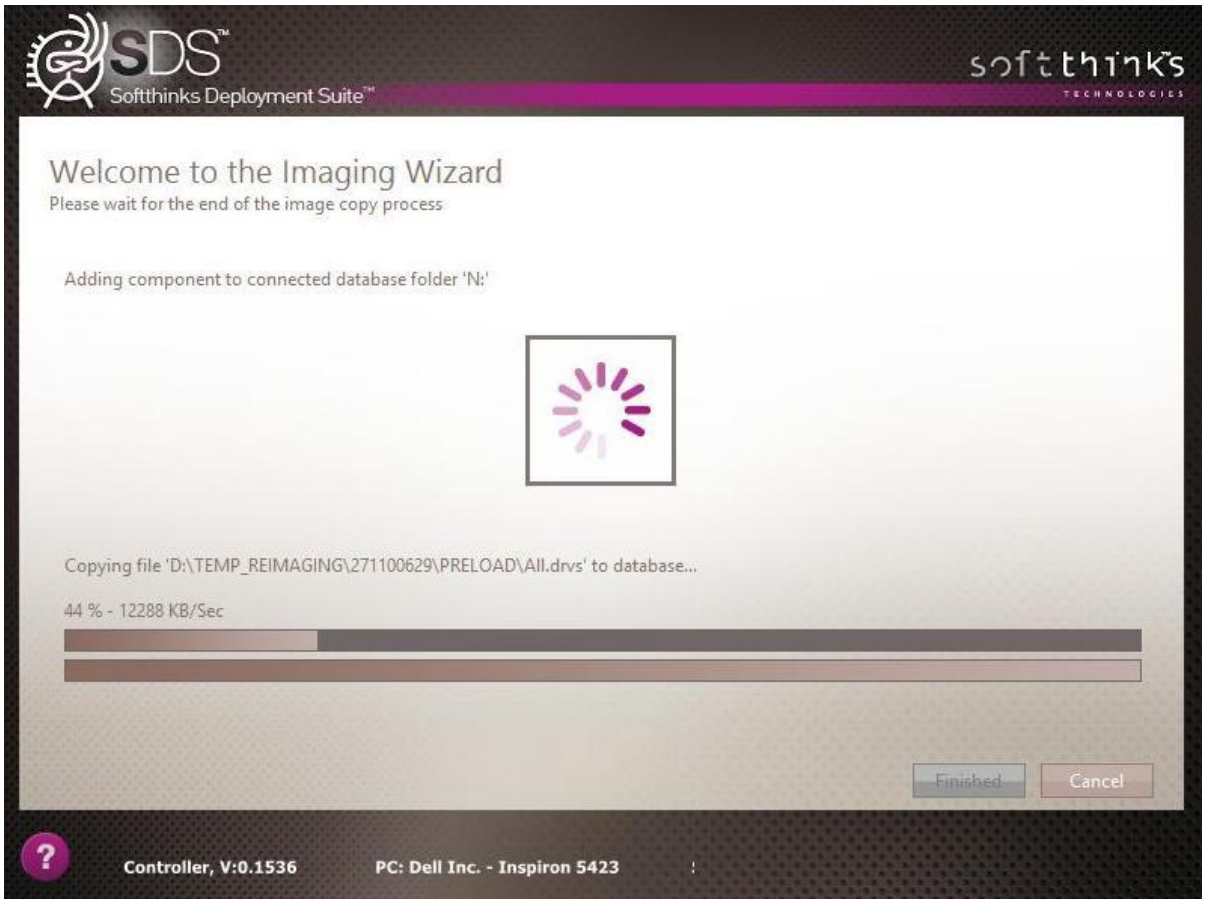
5. The image created will be transferred to the server:




**Note:** If there is any failure, the process will stop.

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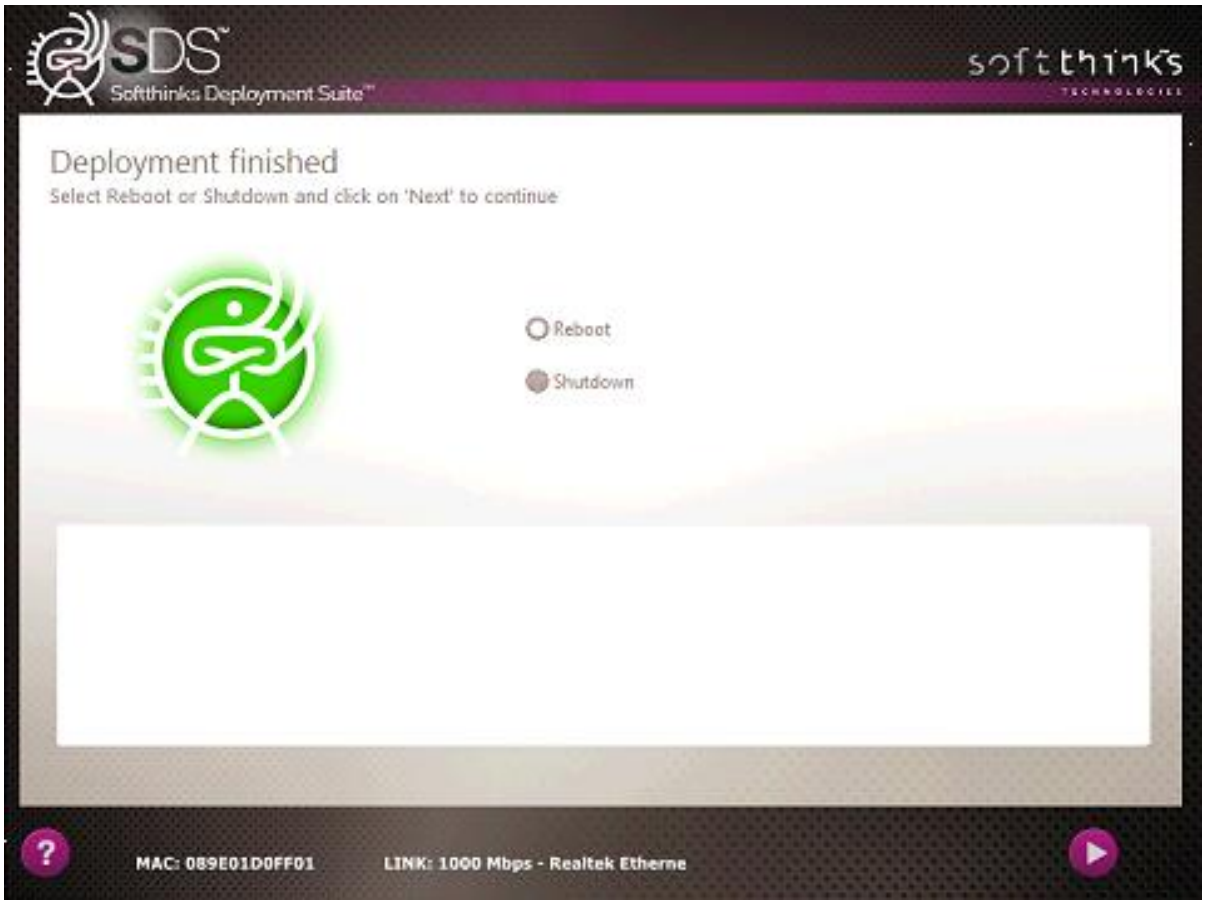
6. You will be notified that the process finished with no issues, and you can choose to reboot or shutdown, or manually power down the device:




7. After the Image Capture is completed, it will be added automatically to the SDS Database and will be available to be deployed (See Adding images).

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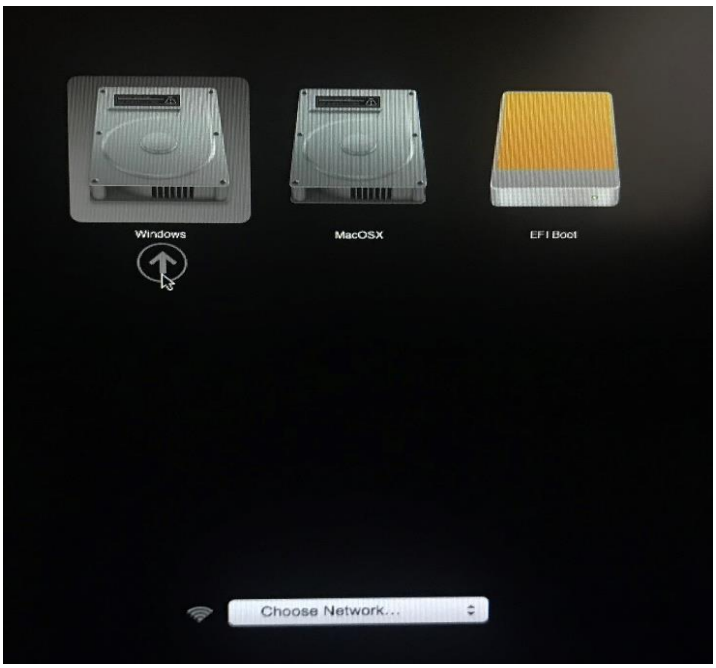
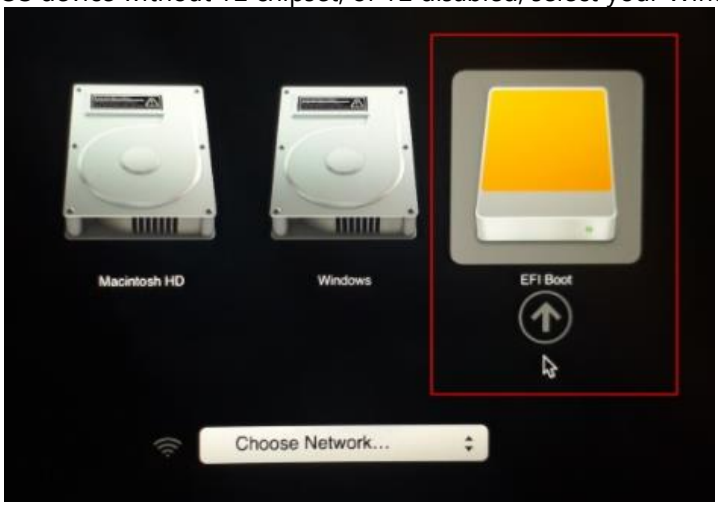
# macOS Image

1. You will first need to restart into SDS environment.
    a. Plug the UEFI SDS PXE boot key
    b. When you hear the startup chime, press and hold the Option key to access to OS X's Startup Manager
    c. Select your Windows PXE boot key.
        i. On macOS device with T2 chipset enabled, select `Windows` device since MAC T2 will block booting from the EFI devices




        ii. On macOS device without T2 chipset, or T2 disabled, select your Windows PXE boot key

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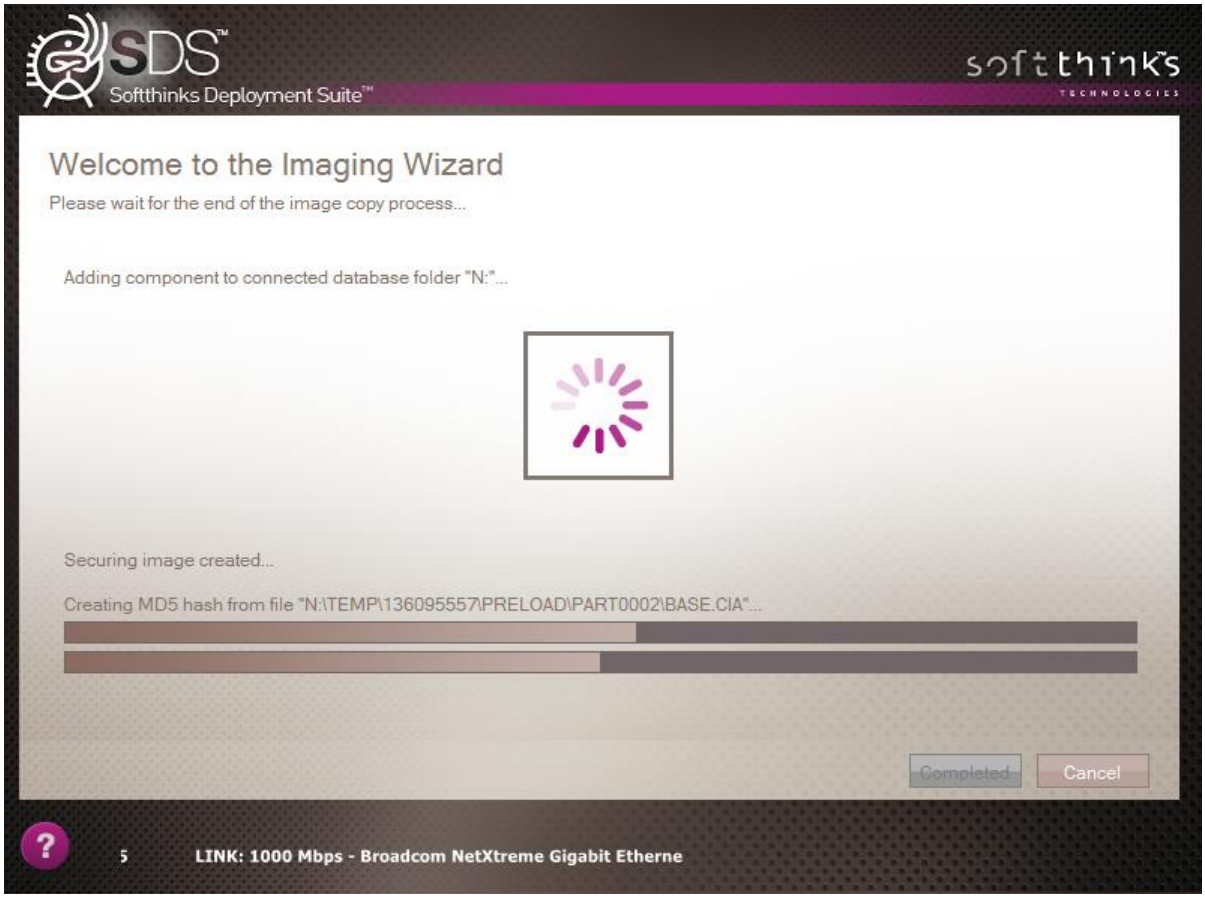
2. From the Welcome screen, select “Imaging” then on the next page select “Create Image”.

3. The image is now being copied:

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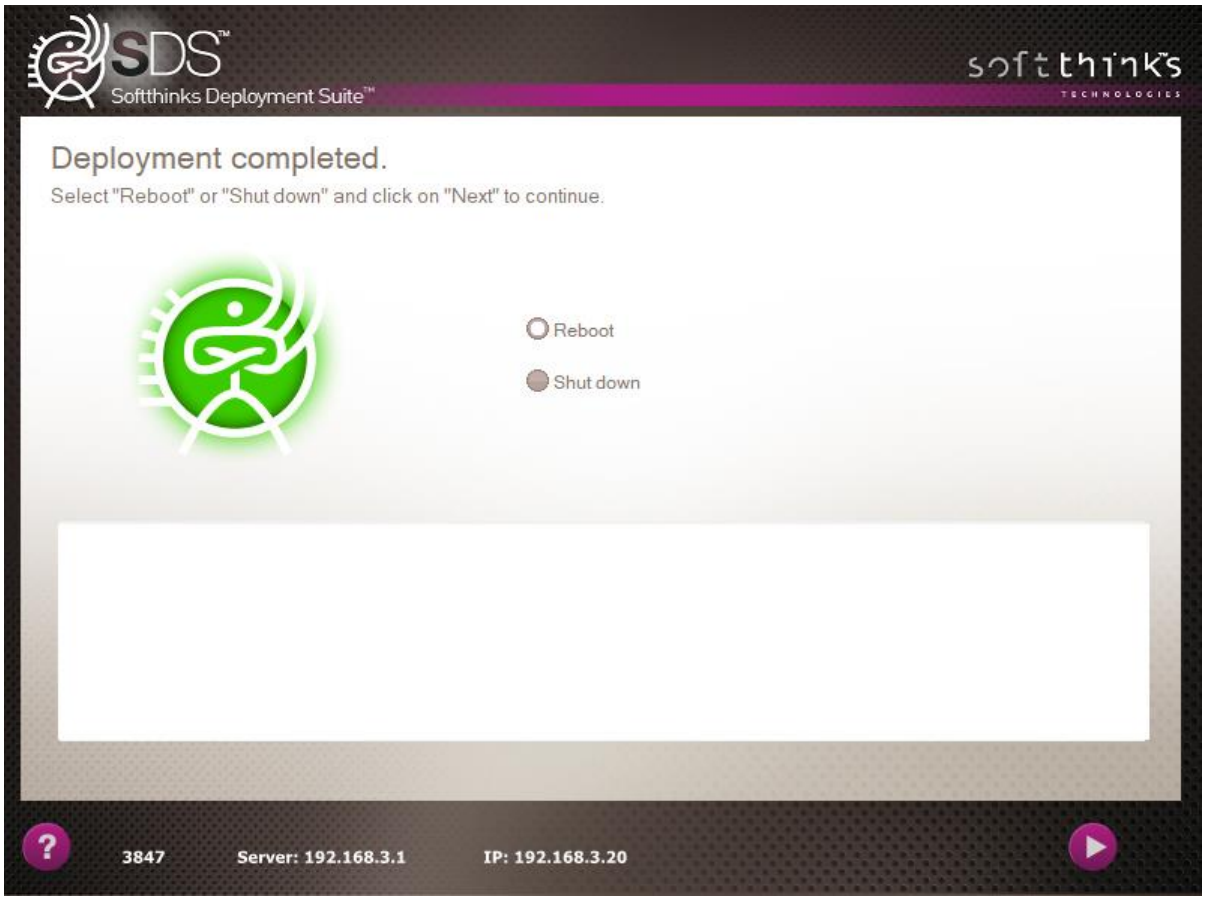
4. The image will be automatically added to the database, and you will get next screen:

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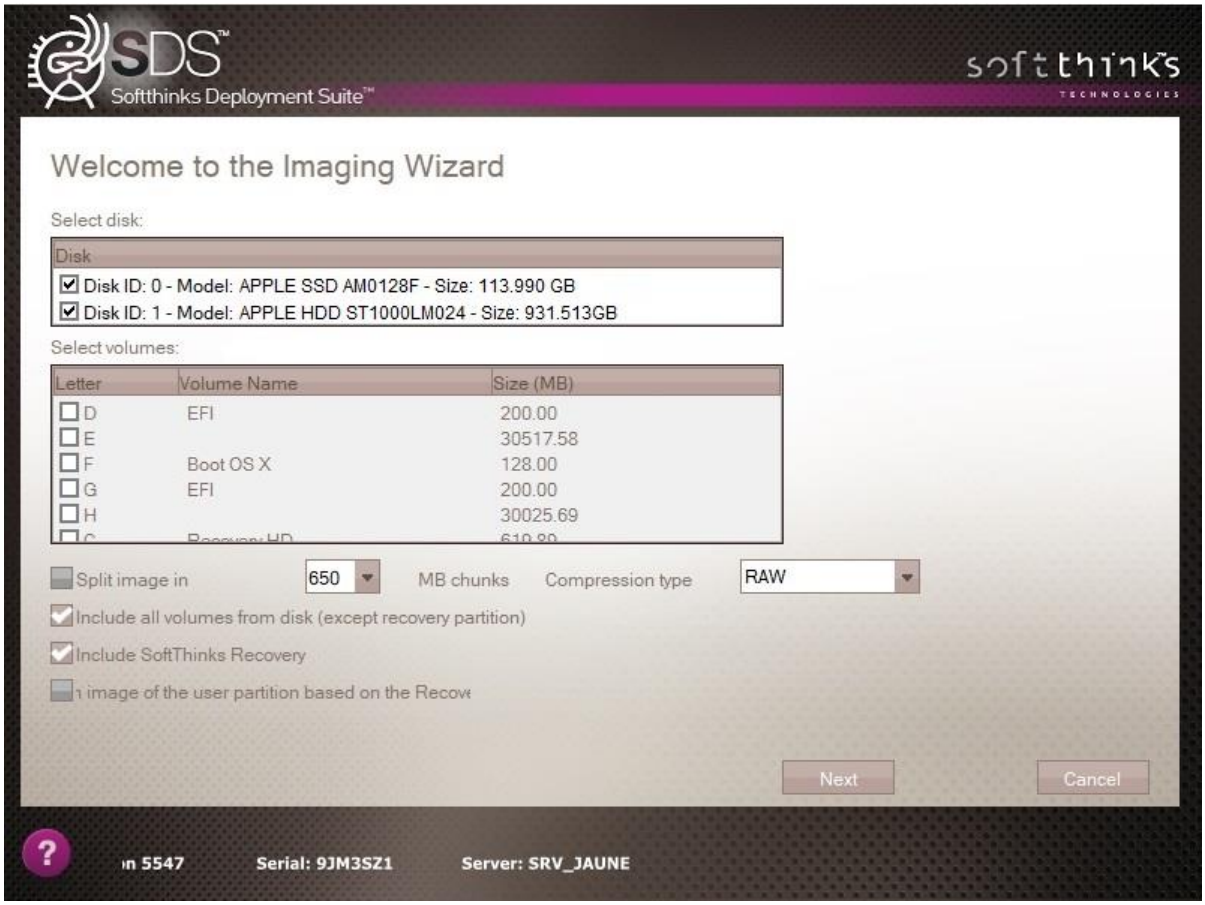
In manual mode (when SDSImaging module is set to work manually), you will get the additional screen below between steps 2 and 3. On a Fusion Drive configuration, select both disks, if not select only the system disk as below:

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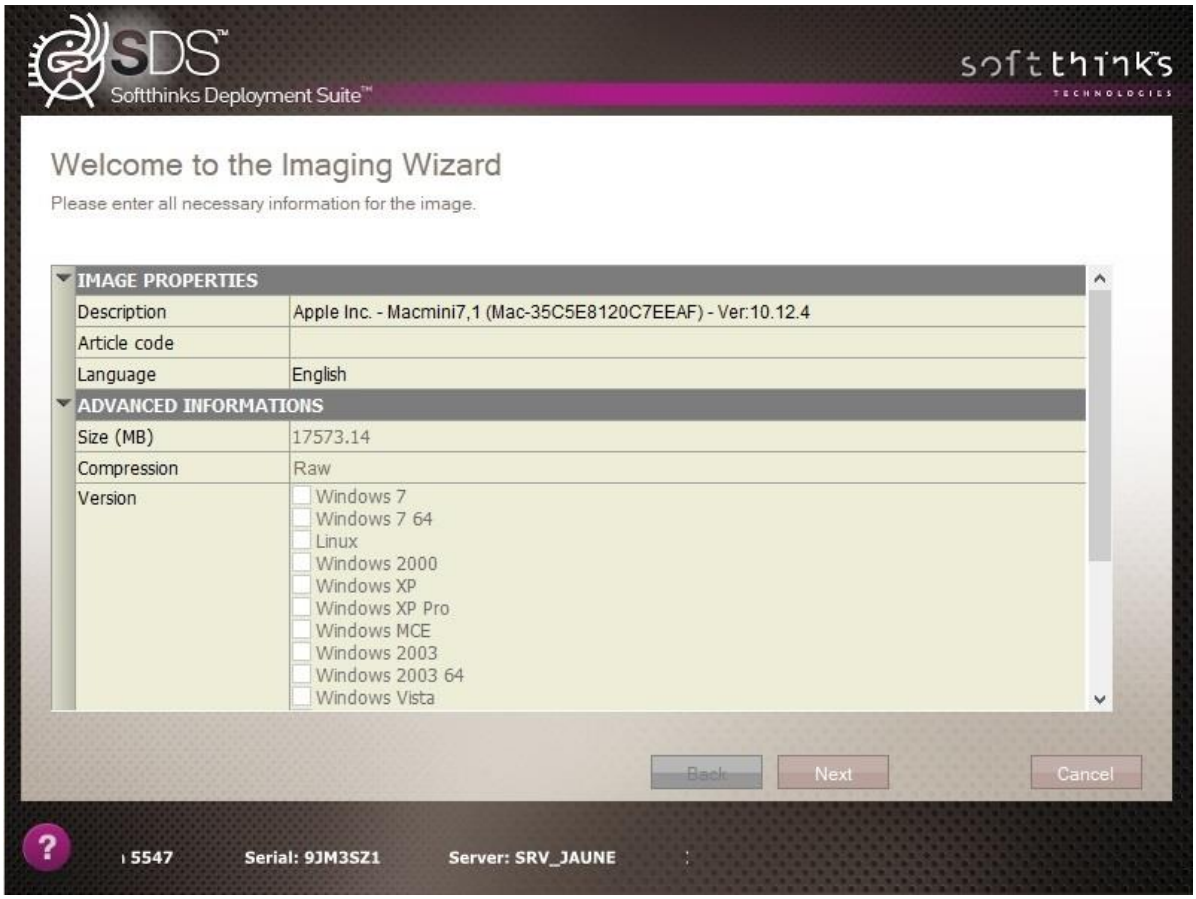
And, still in manual mode, this one between step 3 and 4, once the copy is finished, where we suggest you to indicate the macOS version in the image description and to adjust other properties and information before clicking on the Next button:

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# Linux Image

1. PXE boot the computer to the SDS server (If needed, enable BIOS network boot option) or use bootable USB Flash drive with USB Ethernet adapter (See How to boot from Bootable USB Flash Drive with USB Ethernet adapter).

2. From the Welcome screen, select “Imaging” then on the next page select “Create Image”.

3. In the Menu screen,

    a. Select the “Create new deployment image” option (a) (the radio button will turn from grey to white)

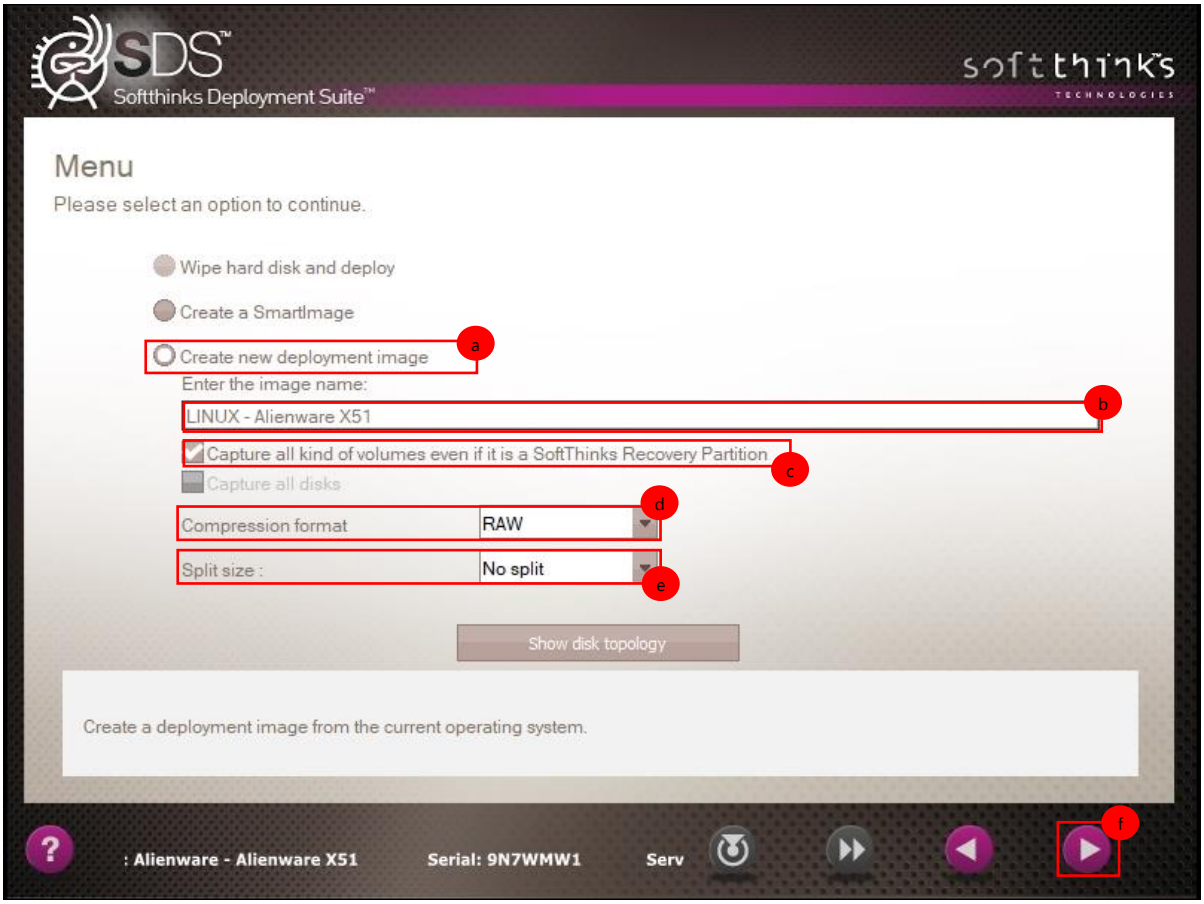
    b. Enter the name of the image (b) (there is no naming convention required)

    c. Ensure that the option “Capture all kind of volumes even if it is a Softthinks Recovery Partition” (c) is checked

    d. Select “RAW” compression format (d) (other formats are not compatible with Linux images)

    e. Set the Split size to “No Split” (e)

    f. Click on the next button (f)

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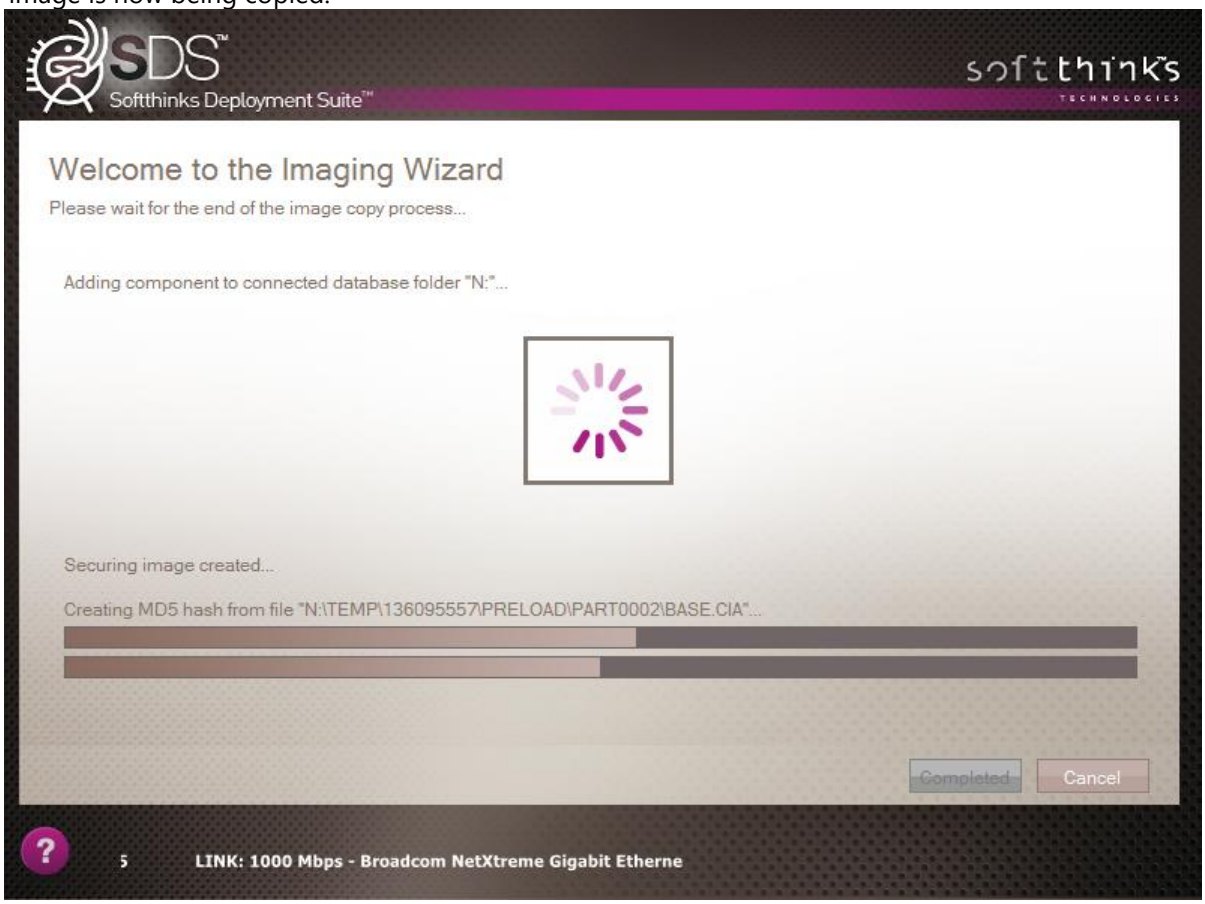
4. The image is now being copied:

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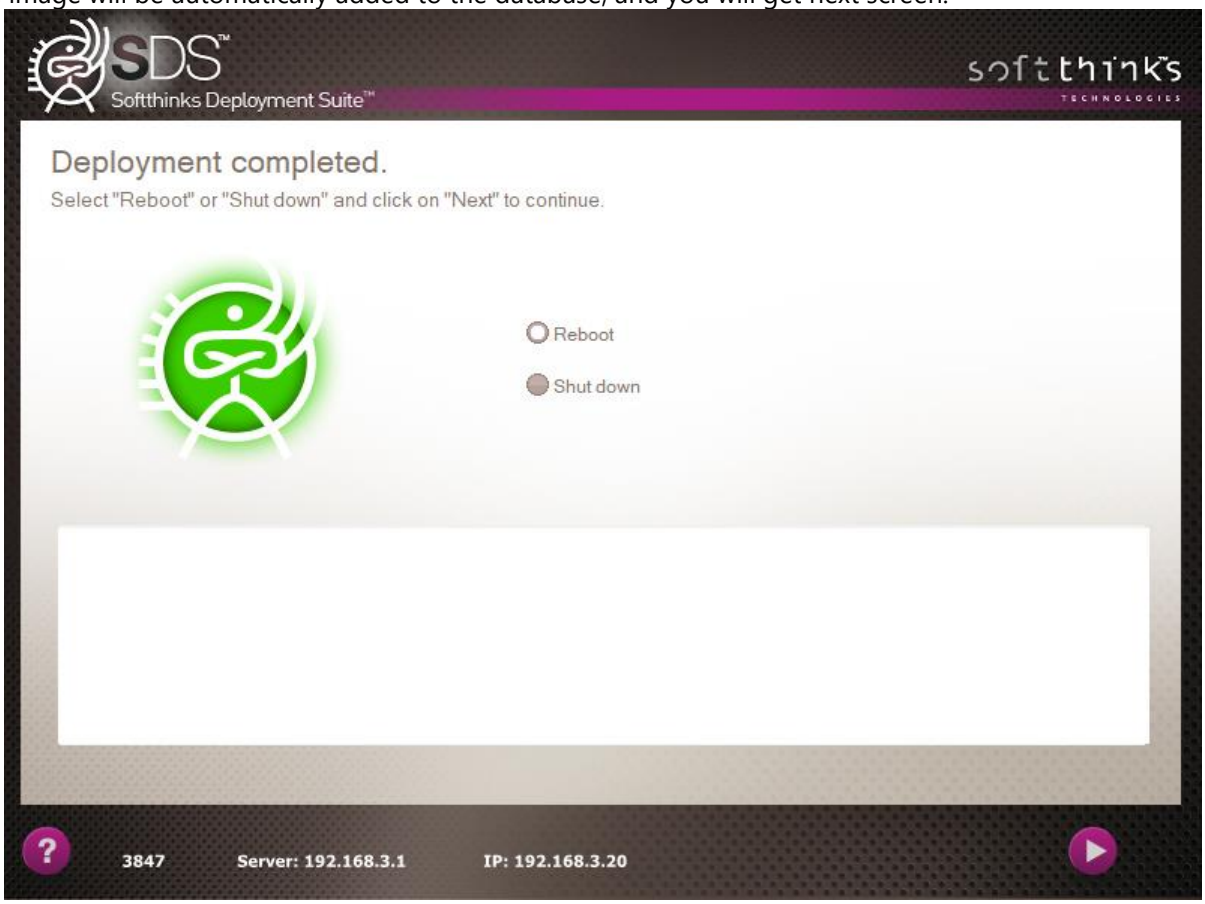
5. The image will be automatically added to the database, and you will get next screen:

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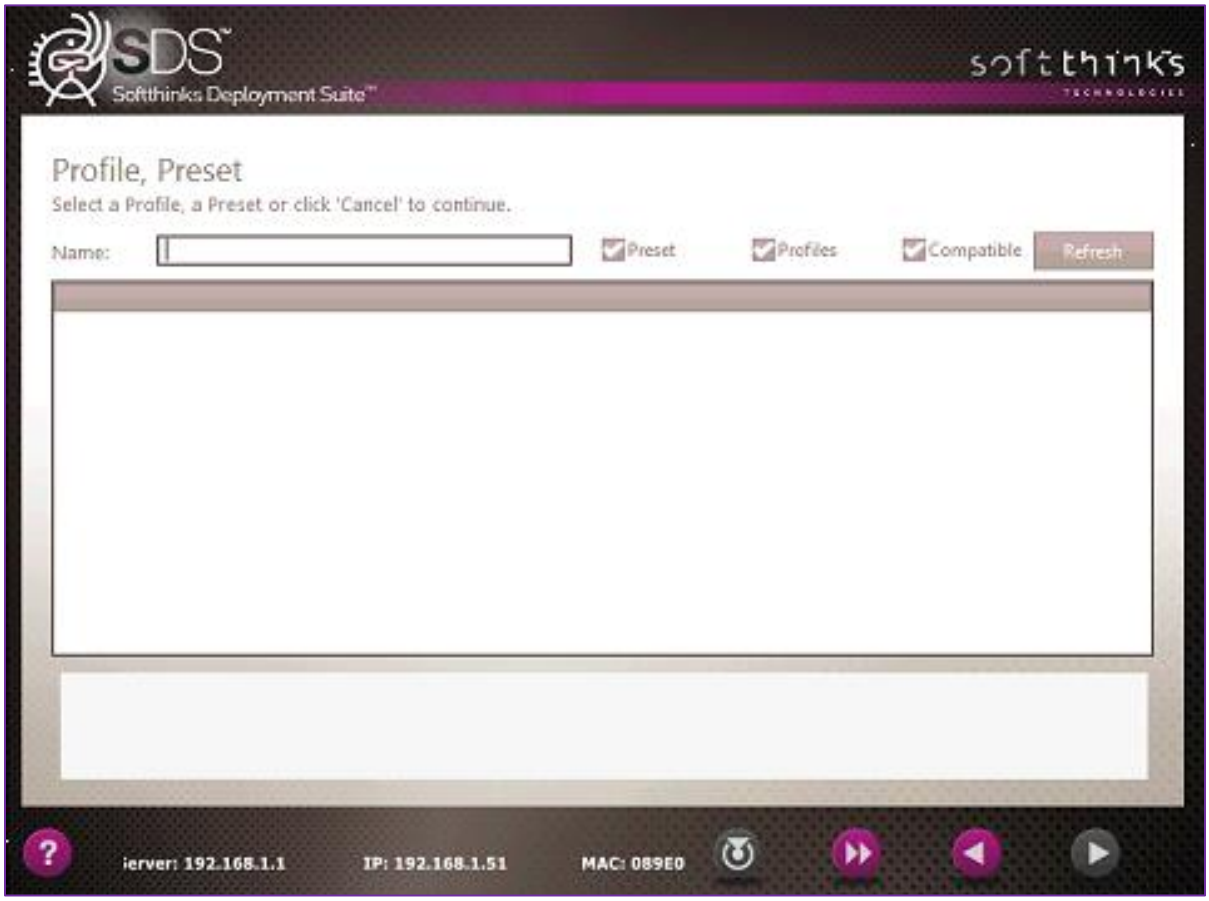
# Deploying an image

## Windows Image

SDS solution give you the ability to deploy the images you created either manually or automatically. This chapter will first describe you the manual process, but you can go directly to Automatic deployment if you want more details on how to automate this process.

1. Boot your Windows device to the server and select the Imaging option from the Welcome Page.

2. If no ADF file is found you will proceed to the Profile, Preset screen:

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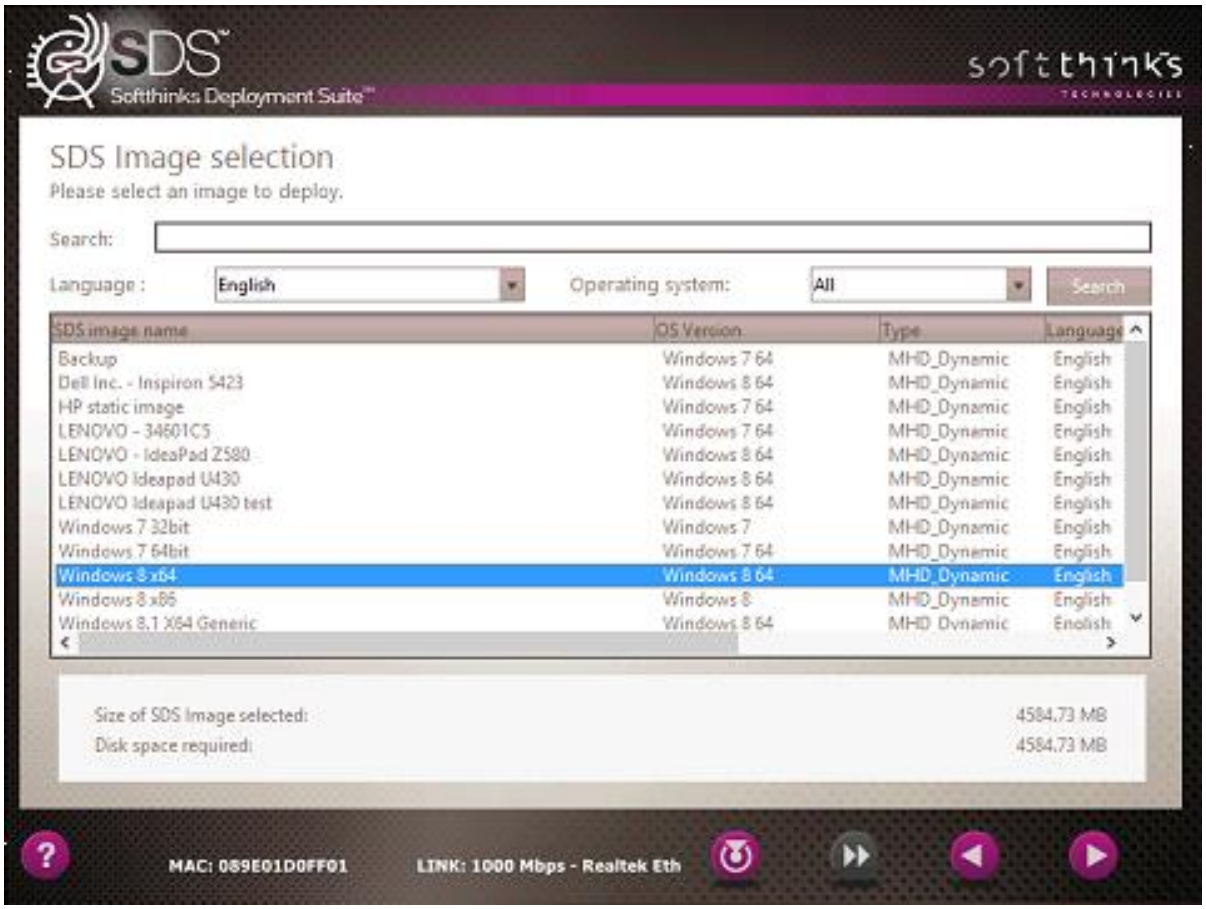
## Manual Deployment

3. If you want to deploy an image manually (or have not yet setup a Profile, Preset, or ADF file), click on the Skip button in the “Profile, Preset” screen.

4. You will be taken to the SDS Image Selection Page and there you will select the image to be applied to the hardware that is connected. You can select the image you want from the full list (filtered by Language and/or Operating System) or search by name:

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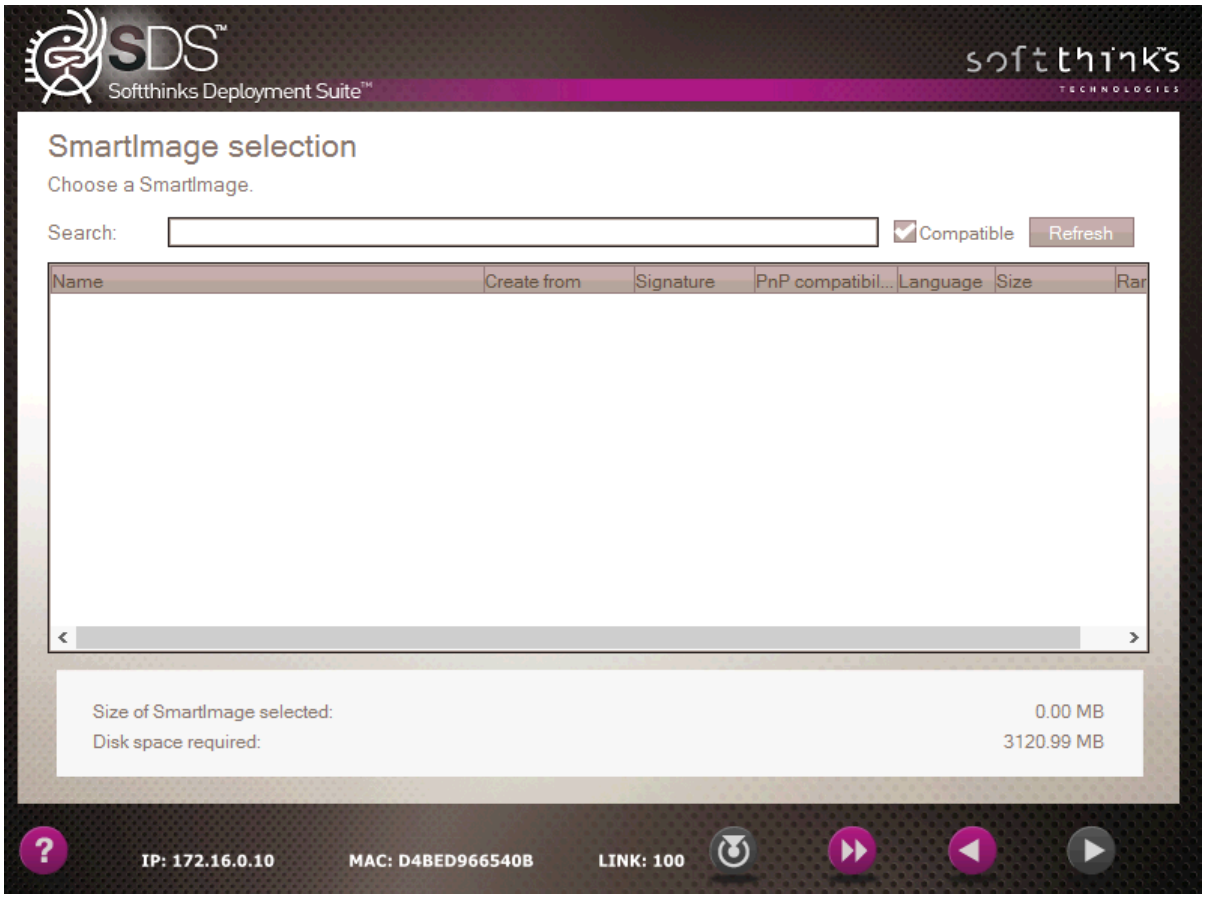
5. If you have created a Smart Image for the computer model you are deploying then you can select it at this screen, or else click on Skip button:

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6. Select the applications to be installed during the deployment (choose them in the left list and click on '>' button to add them to the right list), or else click on Skip button:

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7. Choose the recovery solution option:

**Note:** For a Windows 10 image, there is no “Recovery Solution on additional partition (dedicated recovery partition)” option. Select “No recovery solution” (restore user partition only)” for a Generic Image. You can install the SoftThinks Backup and Recovery (SBAR) solution as an application (please contact your commercial contact). For a Static image select “Keep original disk topology”.

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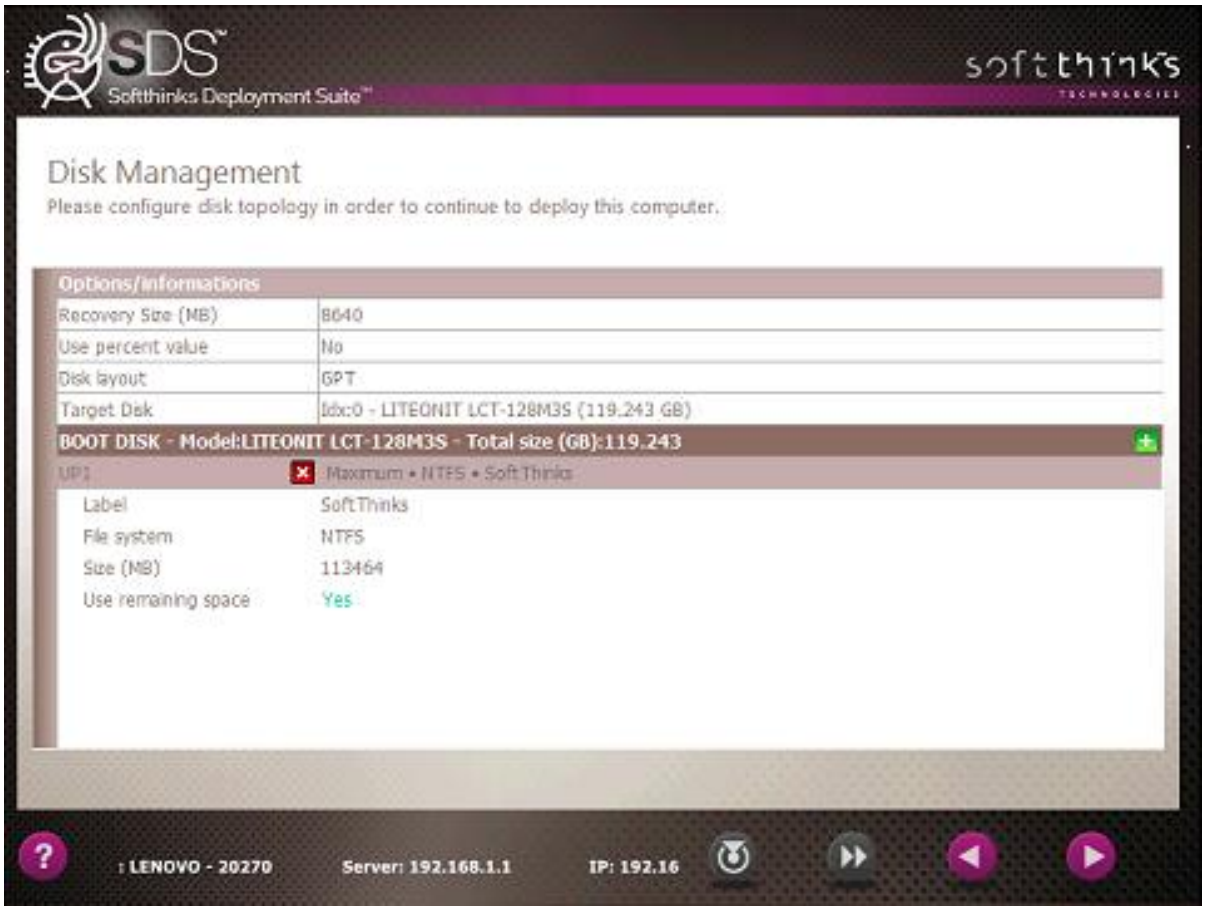
8. Configure the disk topology (the default disk layout can be changed if required, otherwise nothing needs to be selected):




**Note:** Additional User Partitions can be created by changing the Size (%) of UP1 to a smaller amount and then clicking the green « + » symbol on the right side of the Boot Disk line. The new partition will be created with the space that was made available.

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9. Review the options that were selected for the deployment. After the countdown (15 seconds) or when you click on next button the deployment process will begin:

If anything is incorrect you can hover over the Left Purple Arrow and thumbnails of all the screens will show up. You can go back as far as you need to, but hurry as you only have 15 seconds to make your choice or it will advance to the next screen.

If you wish to create a new preset with the choices you made, click the "Create a Preset" button highlighted below. Please keep in mind the delay is only 15 seconds before the deployment starts automatically in order to click this button.

10. Once the countdown is finished, the process will begin based on your script and the choice you made from the Welcome Page.

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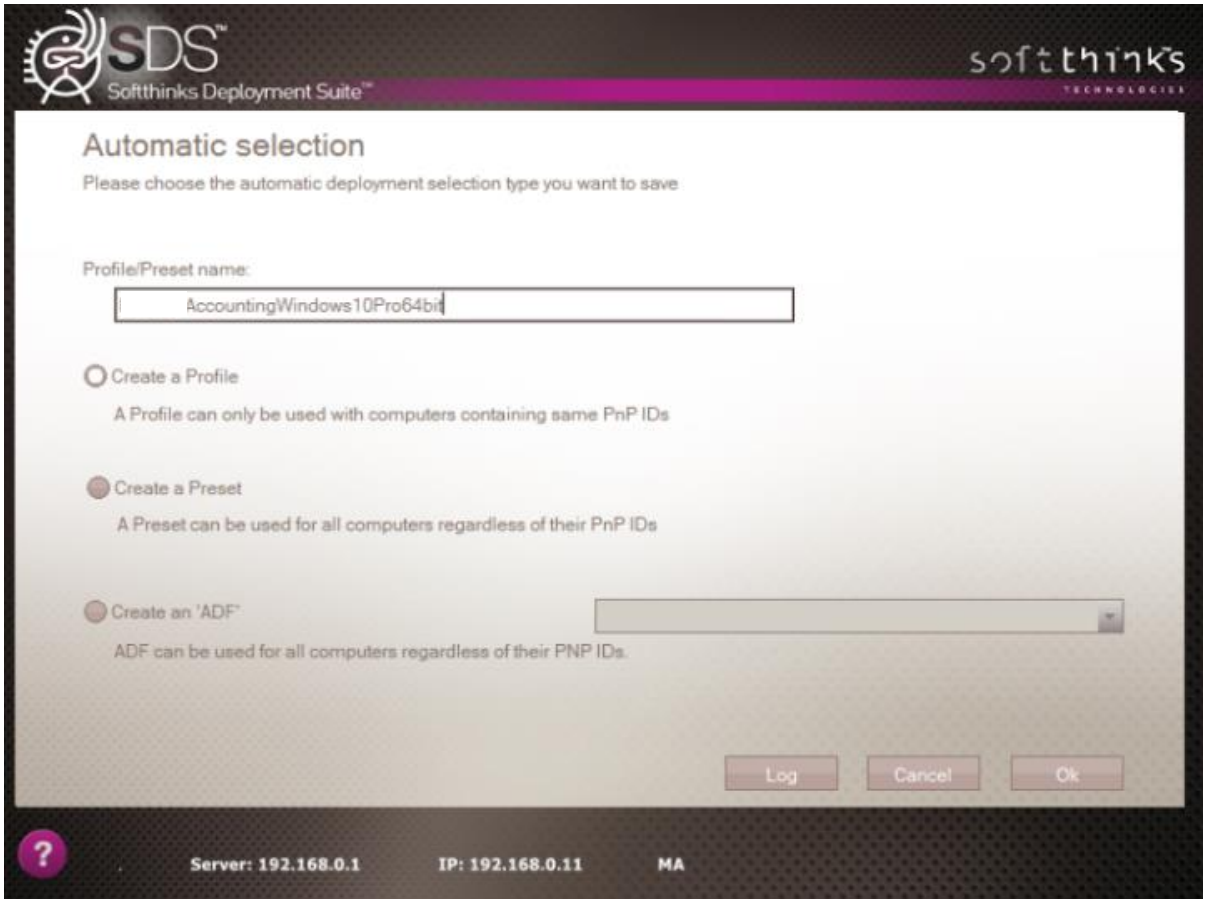
## Automatic Deployment

Automatic image deployments are what set SDS apart from other methods on the market. Three types of the Automatic Deployments (Preset, Profile, and ADF) are available to be created depending on what is being deployed. Once an Automated File is selected, all of the choices that were made will be set for the computer and the screens will blink all the way through to the Summary page.

### Profile

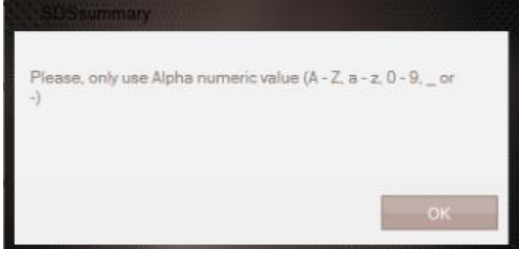
A Profile is linked to the hardware of a model of computer, but does not have a unique identifier in the name. Profiles are useful when you have multiple images of the same OS for the same model of computer (i.e. computers for schools or other organizations that have different images for different departments). A profile needs to be selected from the Profile/Preset Page in order to run.

To create a Profile, click on the "Create a Profile" button and give it a name without spaces or symbols related to the image (note: the button is selected when it turns white), and click on "OK" button to continue:




Your profile has now been created and will be available to use on future deployments.

**Note:** You will get this error if you try to put a space between words in the name:

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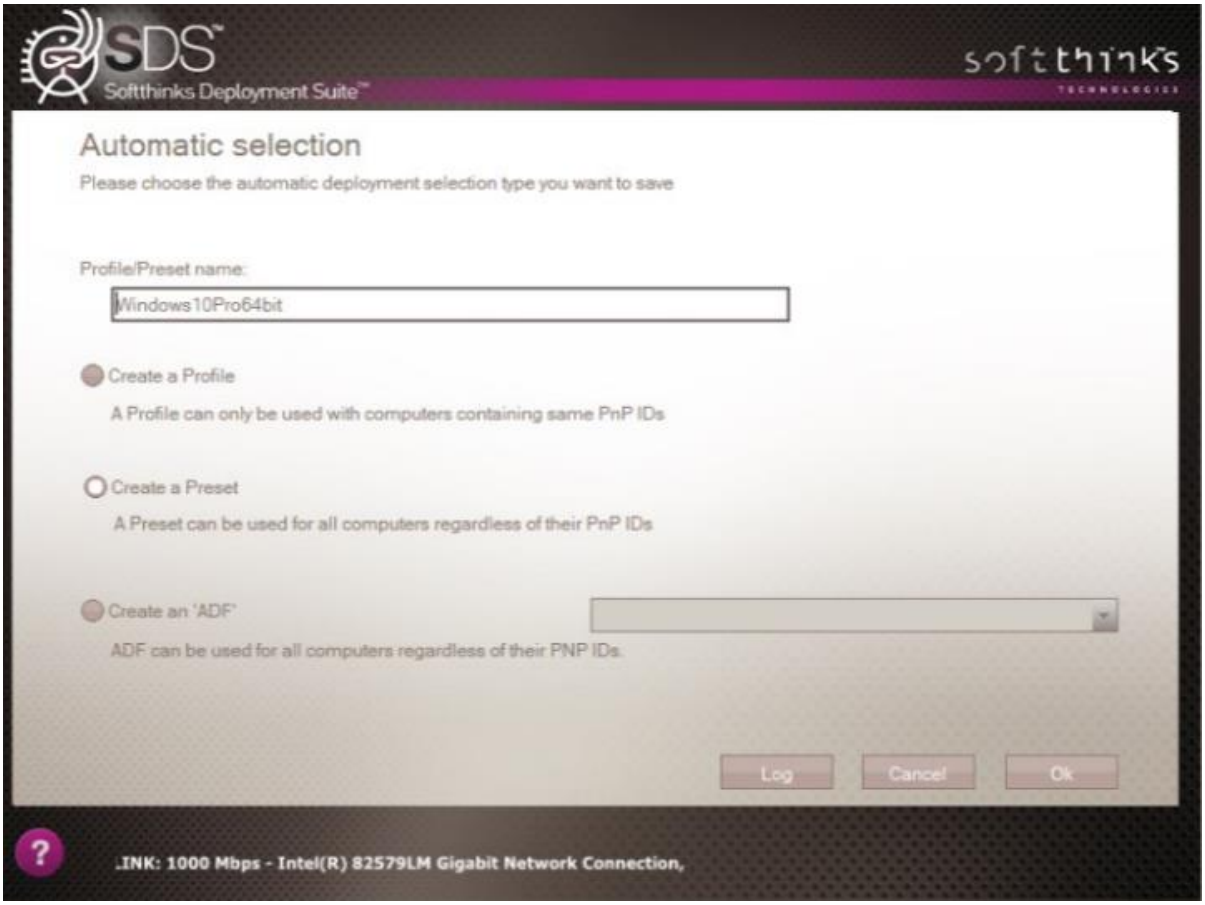
## Preset

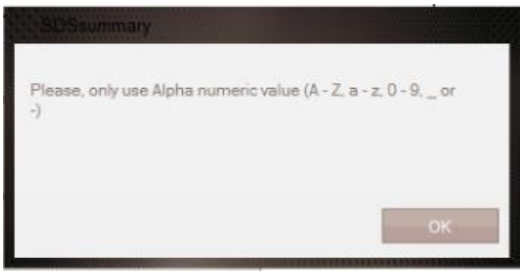
A Preset is not linked to any hardware and does not have a Unique Identifier in the name. It is used to deploy Generic Images to any model of computer with the same choices. A preset needs to be selected from the Profile/Preset Page in order to run.

To create a Preset, click on the "Create a Preset" button and give it a name without spaces or symbols related to the image (note: the button is selected when it turns white), and click on "OK" button to continue:




Your profile has now been created and will be available to use on future deployments.

Note: You will get this error if you try to put a space between words in the name

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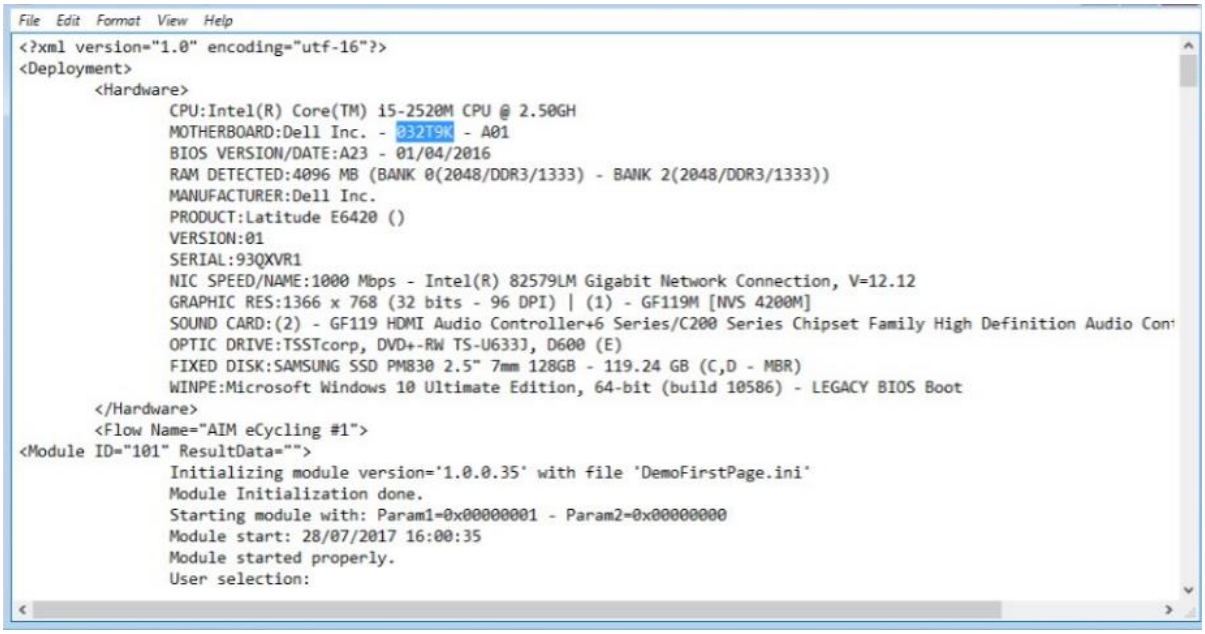
## ADF (Automated Deployment File)

An ADF is linked to the hardware of a model of computer, and uses a unique identifier in the name. An ADF does not need to be selected to run. If the hardware of a computer matches the hardware of the ADF and the Unique Identifier also matches, then the system will automatically run the ADF as soon as Deploy or any variation of Deploy is selected. ADF are useful if you only have one image for an Operating System for a specific model of computer.

To create an ADF, click on the Create an ADF button. In most cases the name for the ADF will be the Motherboard Part Number (sometimes the computer model number will have to be used.)
To get the Motherboard Part Number, click the Log button near the bottom of the screen and the Log file for the deployment of that computer will open up from the RAM of the computer:

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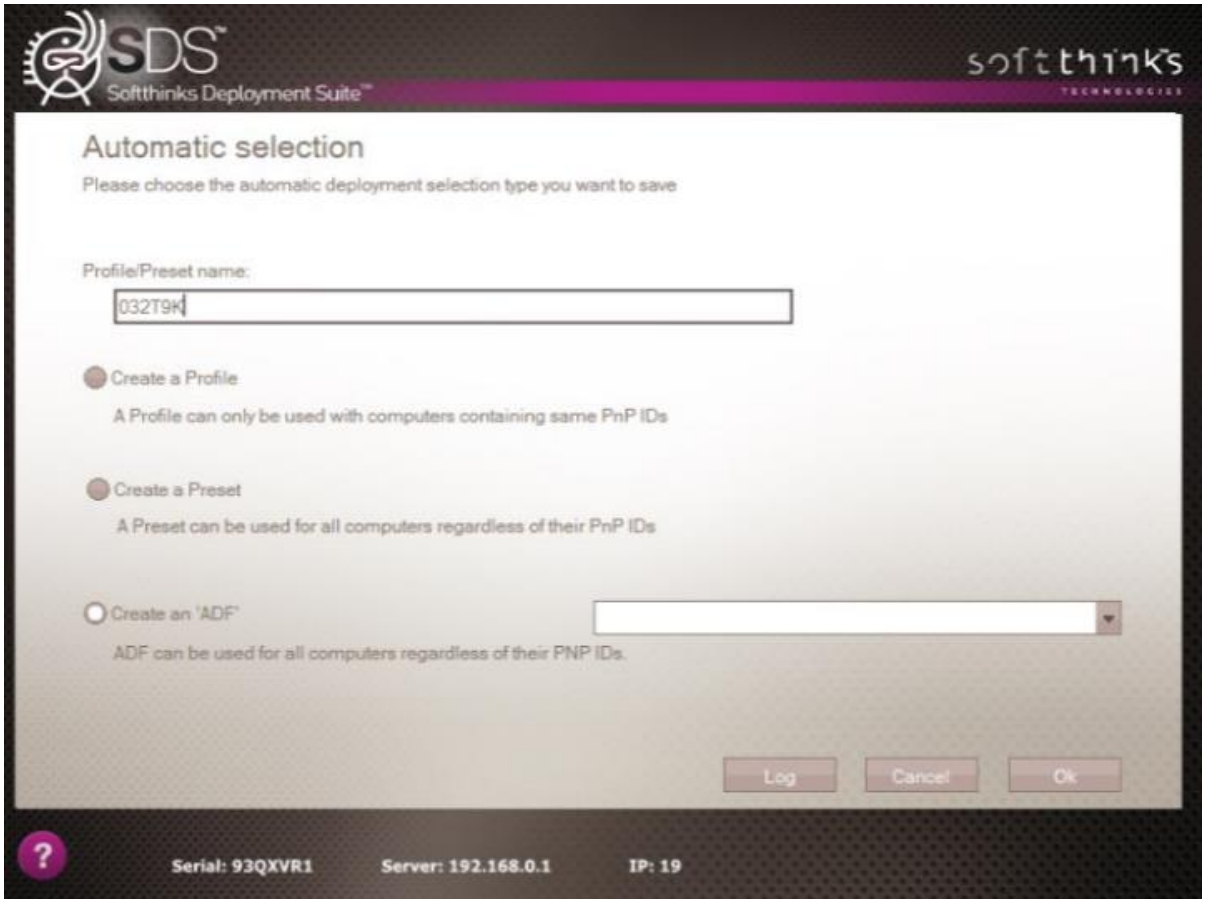
The Motherboard Part number (if listed in the BIOS of the computer) will be in the hardware list of the computer in the top section of the log file. Highlight it and Copy the Name. Then close the log and paste the name into the Profile/Preset name box:




Your ADF has now been created and will be available to use on future deployments.

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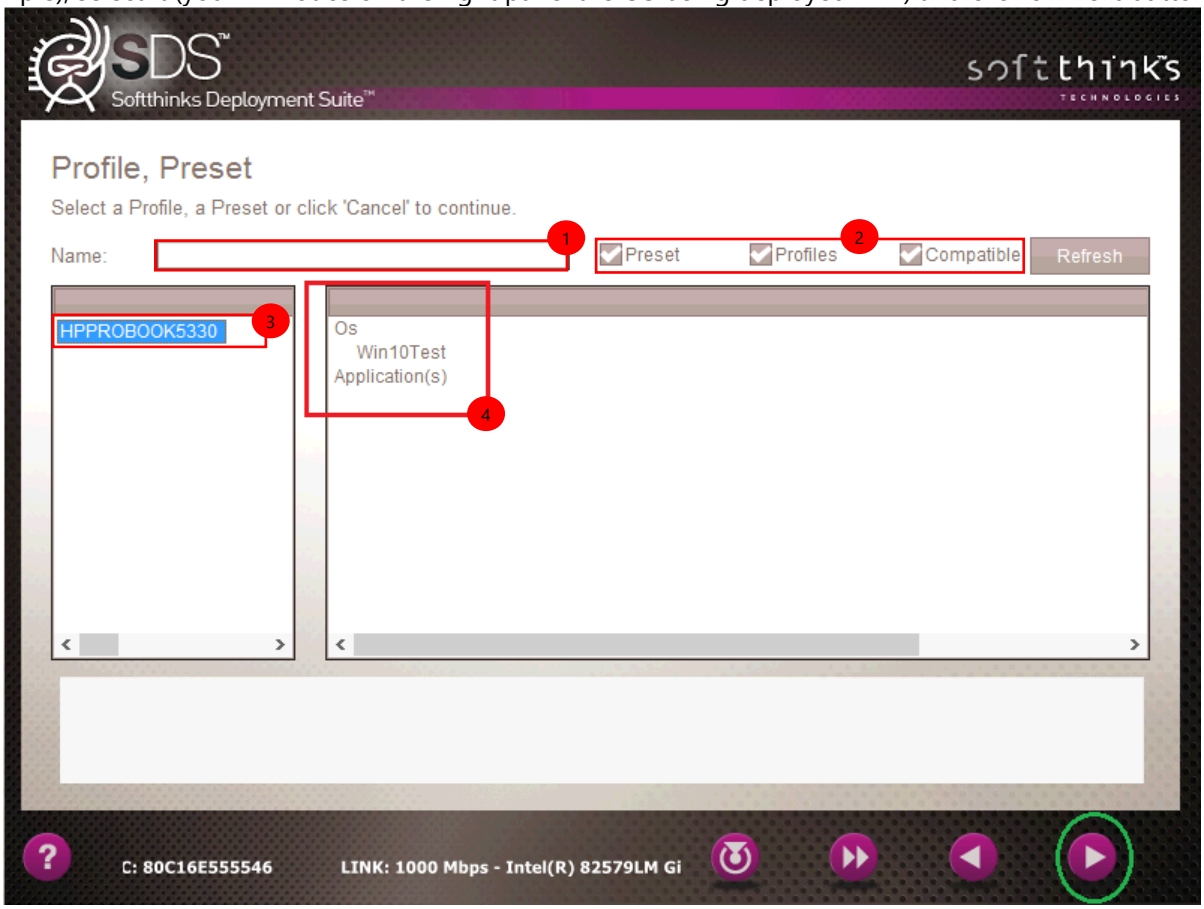
If the current device doesn't match an existing ADF file, select a Profile / Preset (See Definitions, Acronyms and Abbreviations used in this user guide) to deploy **automatically**. You can search for specific profile/preset/ADF name 1 and filter them by type 2, and if one is matching your need in the list 3 ("HPPROBOK5330" in our example), select it (you will notice on the right panel the OS being deployed 4) and click on Next button:

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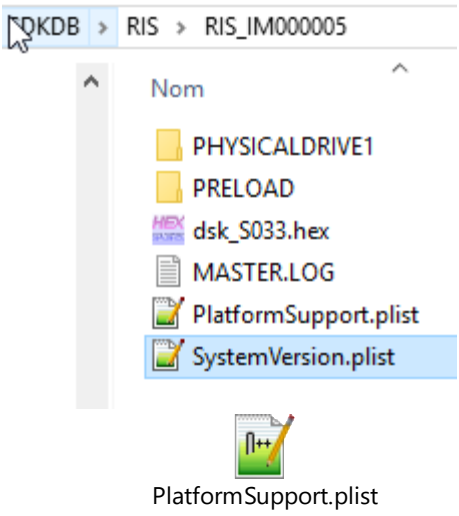
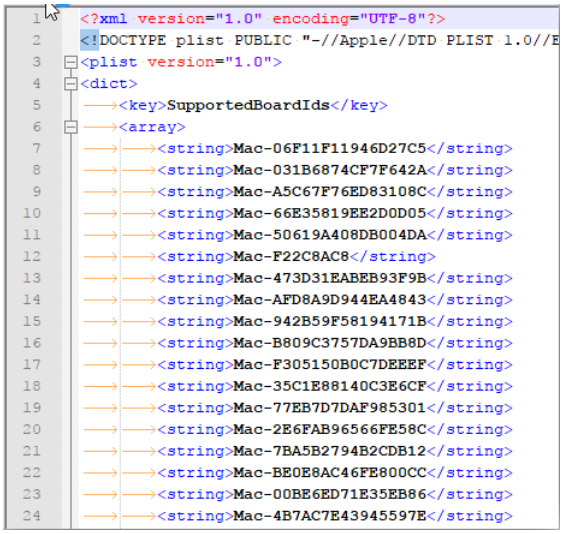
# macOS Image

Once an image is added to the SDS database, it will be possible to apply it to any Mac, usually the same Model that you captured the image from.  However, some other models could use the same image.
A Mac can be identified in BIOS with a hardware ID.
For example, in red.

CPU:Intel(R) Core(TM) i5-4308U CPU @ 2.80GHz
MOTHERBOARD:Apple Inc. - **Mac-35C5E08120C7EEAF - Macmini7,1**
BIOS VERSION/DATE:MM71.88Z.0220.B14.1702161608 - 02/16/2017
RAM DETECTED:8192 MB (BANK 0(0/DDR3/1600) - BANK 1(0/DDR3/1600))
MANUFACTURER:Apple Inc.
PRODUCT:Macmini7,1 (System SKU#)
VERSION:1.0
SERIAL:C0KT800UGF1T
NIC SPEED/NAME:100 Mbps - Broadcom NetXtreme Gigabit Ethernet Driver, V=17.2
GRAPHIC RES:1024 x 768 (32 bits - 96 DPI) | (1) - Haswell-ULT Integrated Graphics Controller
SOUND CARD:(2) - Haswell-ULT HD Audio Controller+8 Series HD Audio Controller
OPTIC DRIVE:
FIXED DISK:APPLE SSD SM0128F - 113.00 GB ( - GPT)
APPLE HDD ST1000LM024 - 931.51 GB ( - GPT)

If you look closer at the recovery in the RIS folder of the image you will find 2 *.plist files which identify the Mac OS version and the platforms supported by the OS version:




You can check this file to see what other Mac plaforms can use this same image. Some Mac mini could have different hardware but this image could probably support other Mac. You have to check in those files.
If you have an old MacBook Pro 10.8.5  like this one: 'Apple Inc. – MacBook Pro 9.2 (Mac-6F01561E16C75D06)' you will notice that the image captured is supporting my MacBook Pro so you can download it directly without update through ITunes.

Since we are using a Bootcamp driver to mount HFS+ partition only reading is possible.
To download a Mac OS image in SDS you will need an adapted script. Since volumes are read-only no modules are able to add anything to the image deployed under WinPE environment.

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Adapt your SDS script. It is identical for the capture, only the download was adjusted as follow:

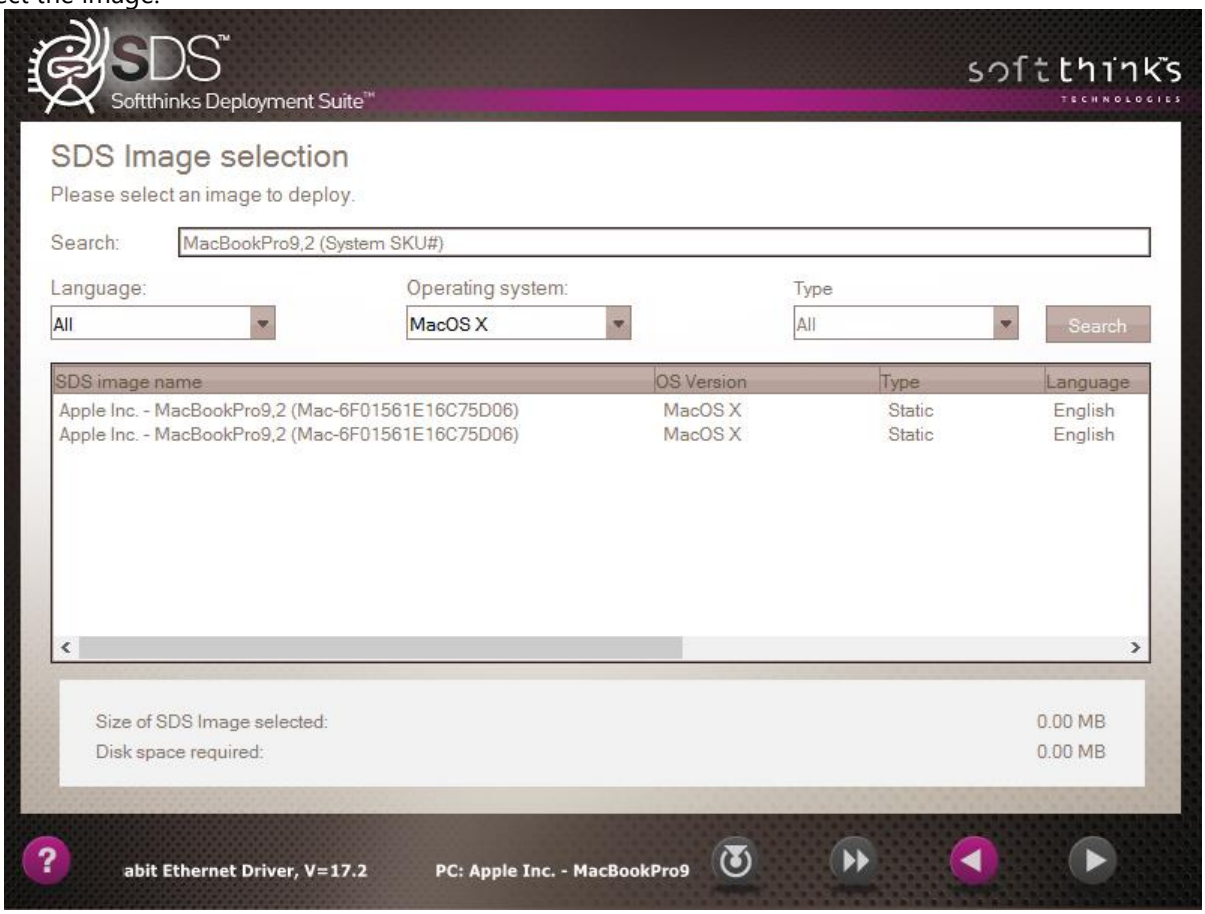
```
<!-- if mac, only restore ...-->
        <SETVAR MACOS="%OS%"></SETVAR>     → DETECTING IF WE HAD SELECTED A MACOS IMAGE
        <IF MACOS="20">
                <Module Id="115" ConfigFile="" Param1="1" Param2="6" FullScrn="0"></Module>
                <SEND_LOGS></SEND_LOGS>
                <SETVAR RESTORE="RESULT"></SETVAR>

                <IF CREATE="0" OP="&" RESTORE="1">
                        <Module Id="119" ConfigFile="" Param1="0x1" Param2="0" FullScrn="0"></Module>
                </IF>
                <ELSE>
                        <SEND_LOGS Source="X:\windows\system32\*.log" Destination="R:\" ></SEND_LOGS>
                        <Module Id="119" ConfigFile="" Param1="0x2" Param2="0" FullScrn="0"></Module>
                </ELSE>
        </IF>
```

script.xml

1. Boot your device to the SDS Server and select the  image deployment option

2. Select the image:

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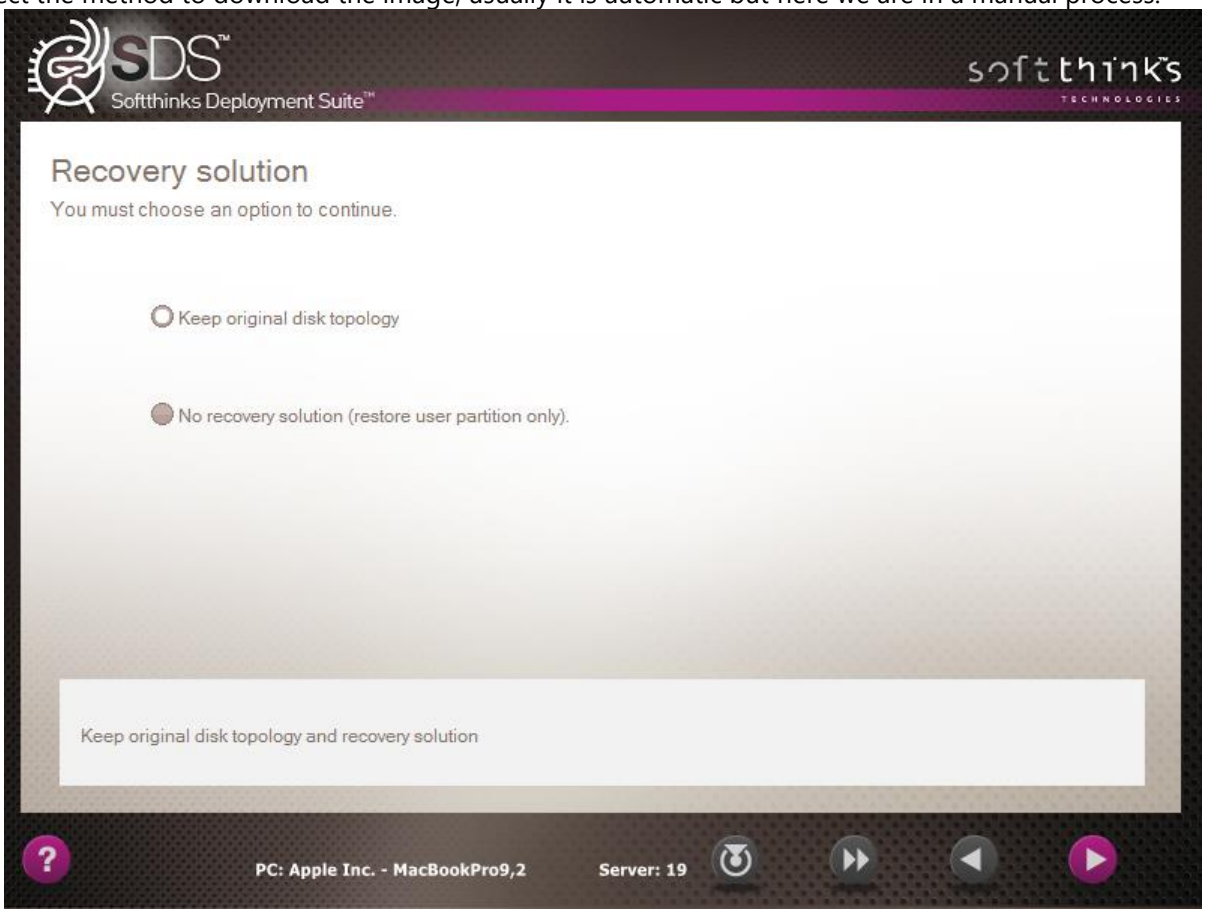
3. Select the method to download the image, usually it is automatic but here we are in a manual process:

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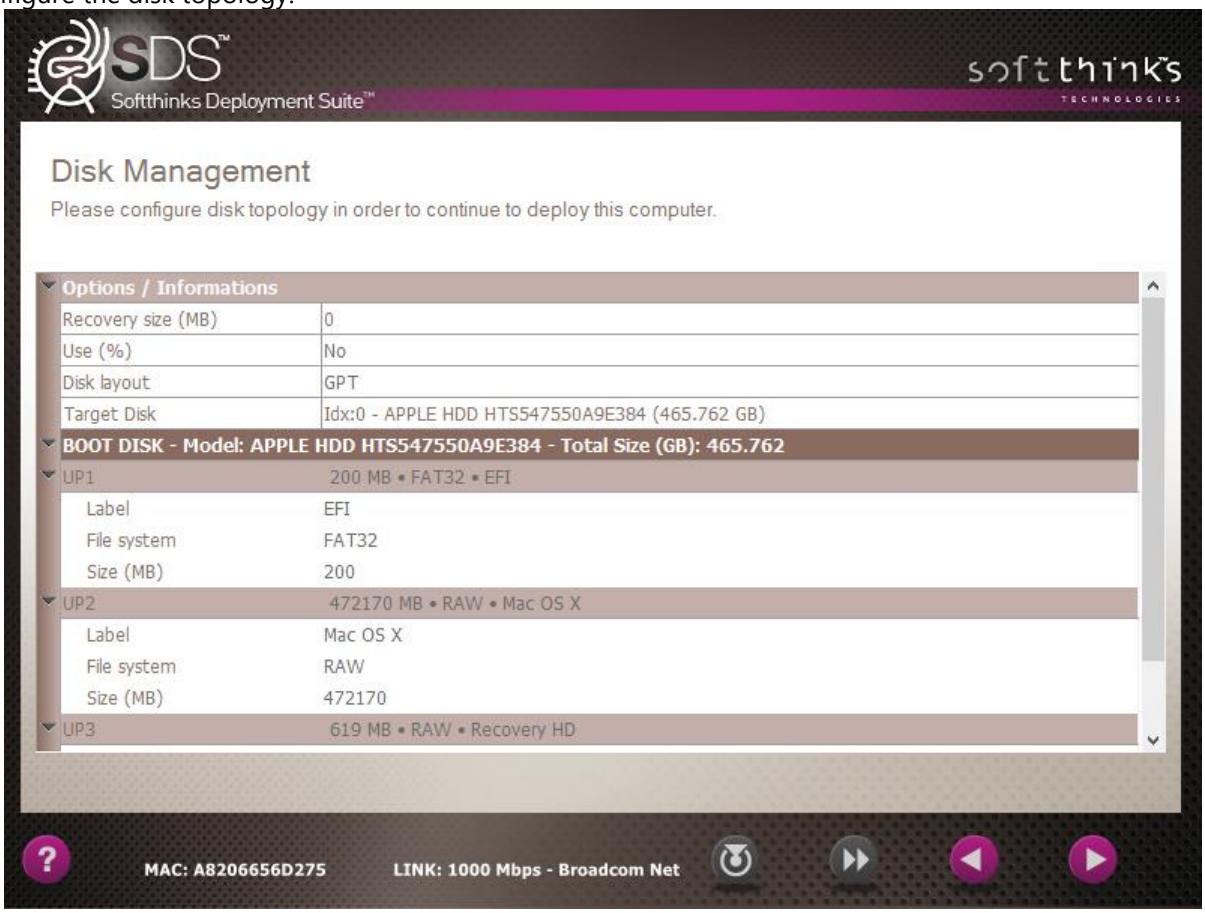
4. Configure the disk topology:

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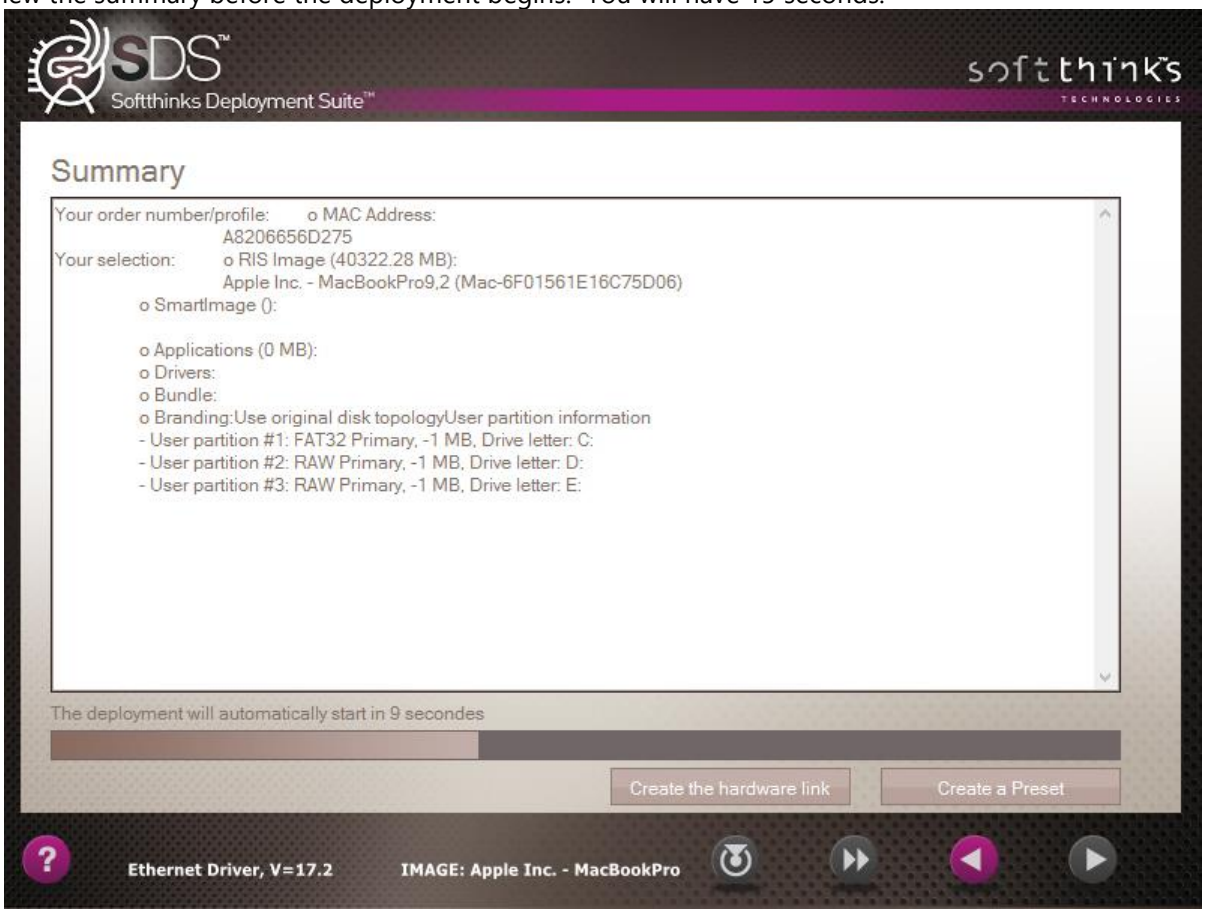
5. Review the summary before the deployment begins. You will have 15 seconds:

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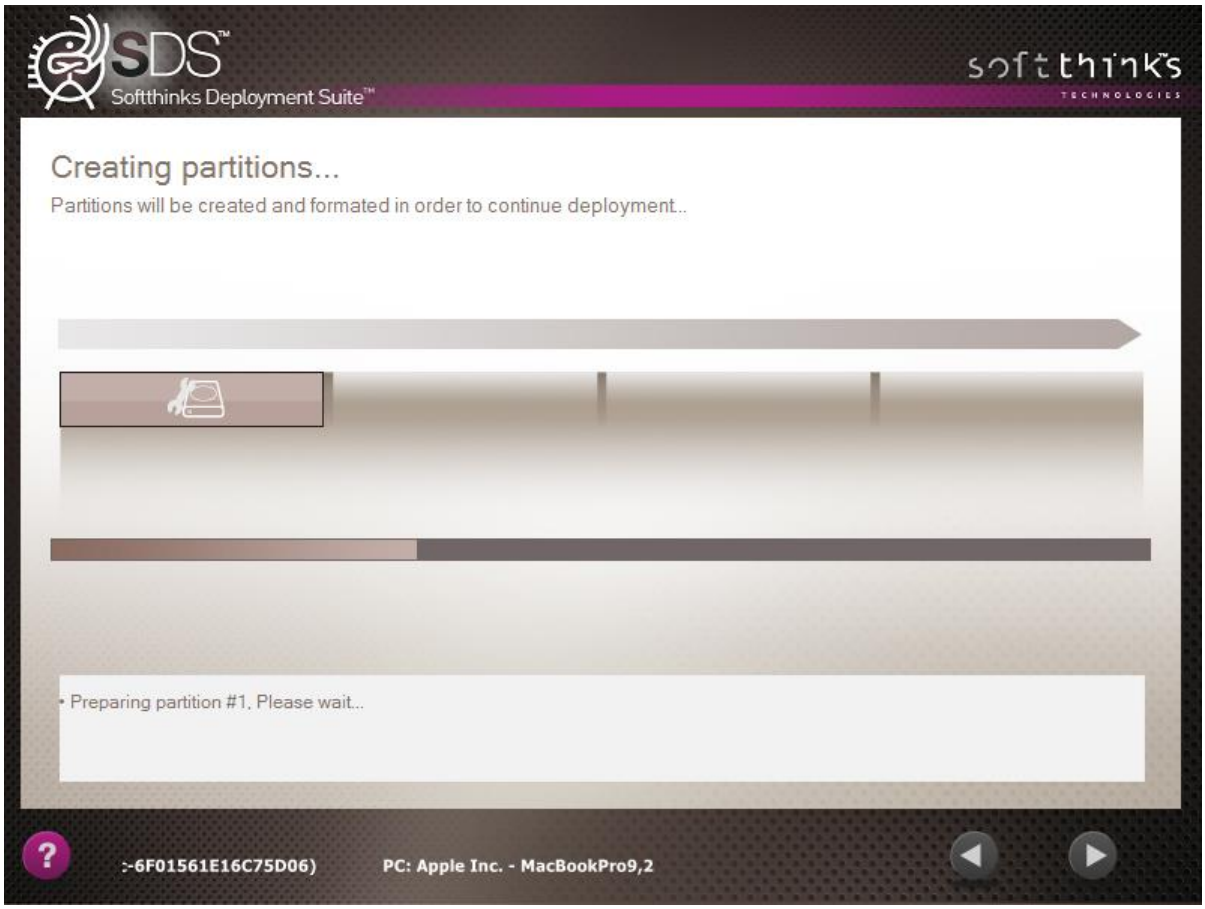
6. Partition creation:

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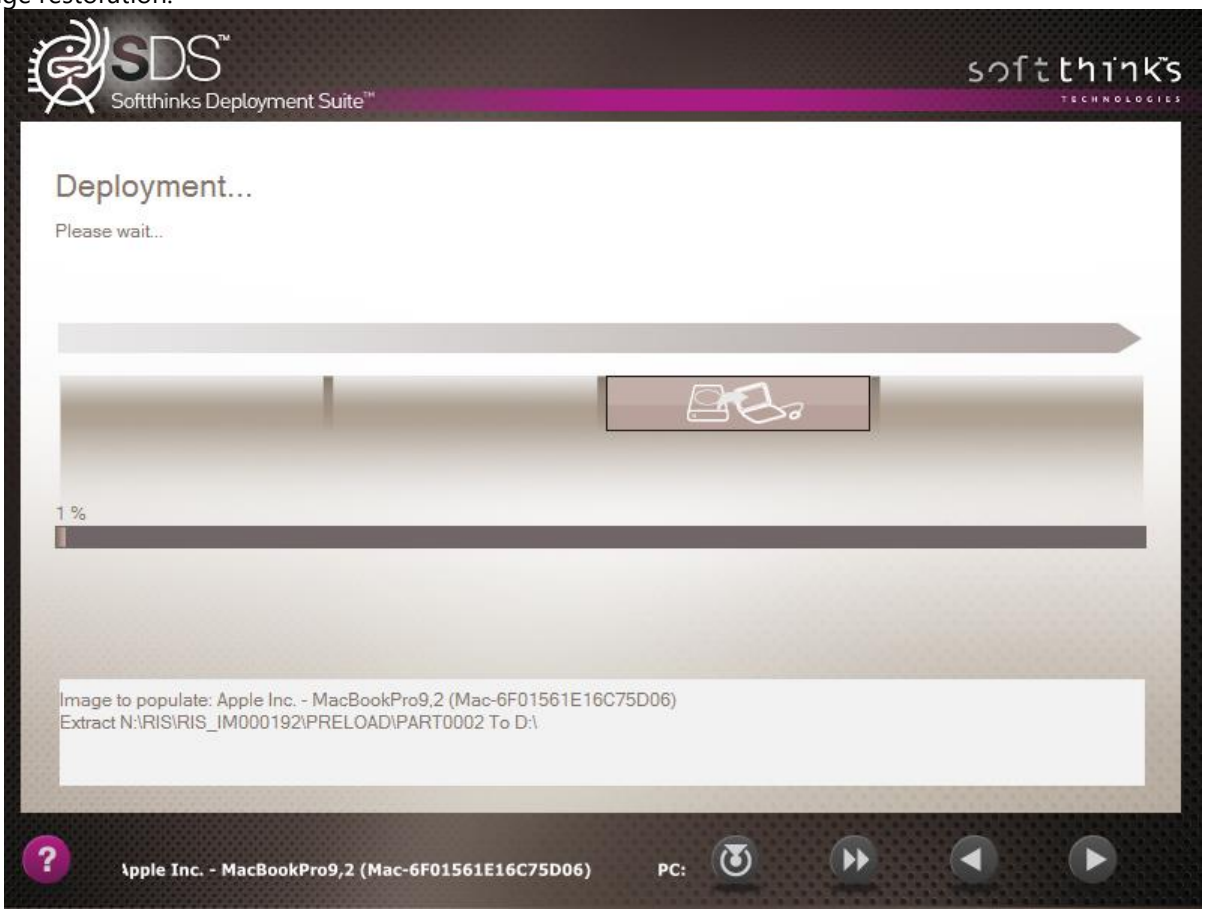
7. Image restoration:

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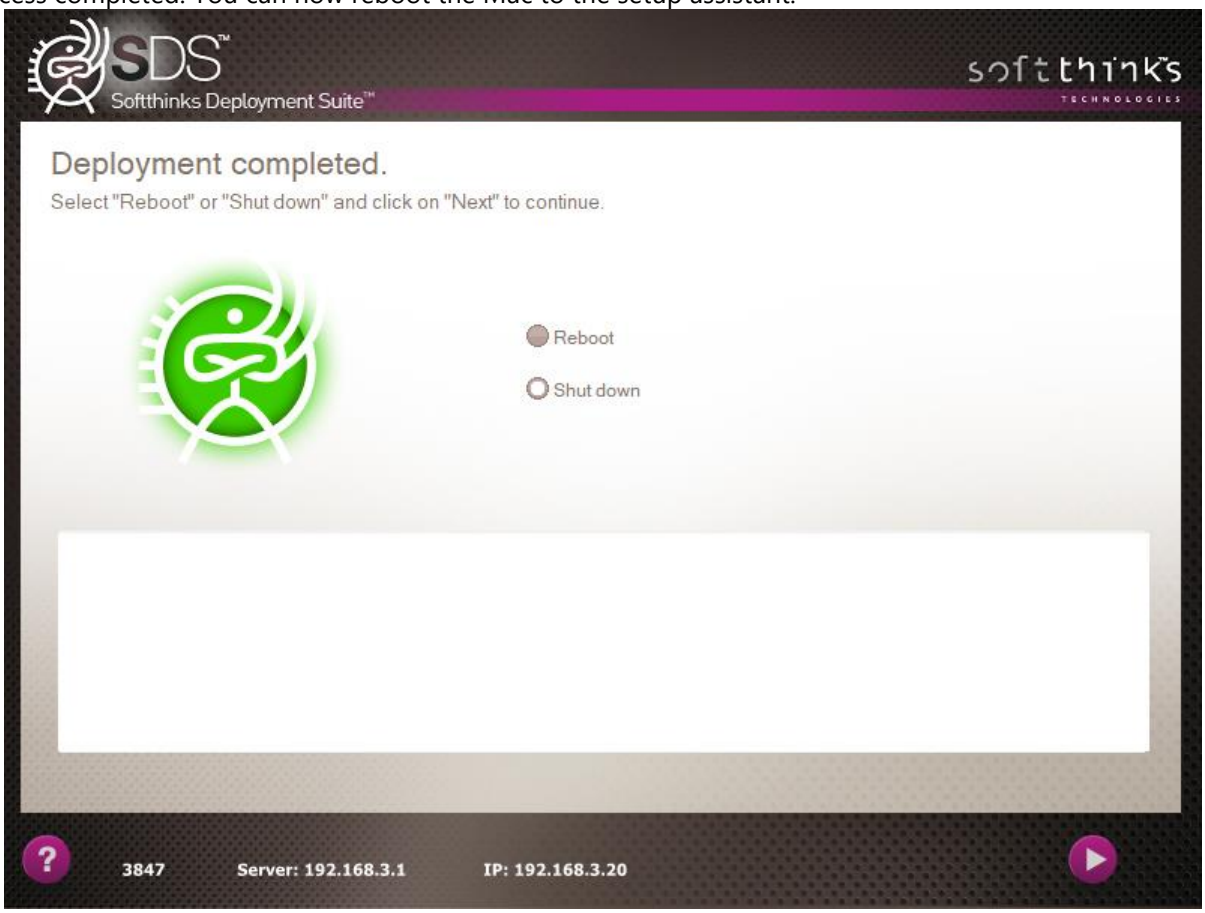
8. Process completed. You can now reboot the Mac to the setup assistant:

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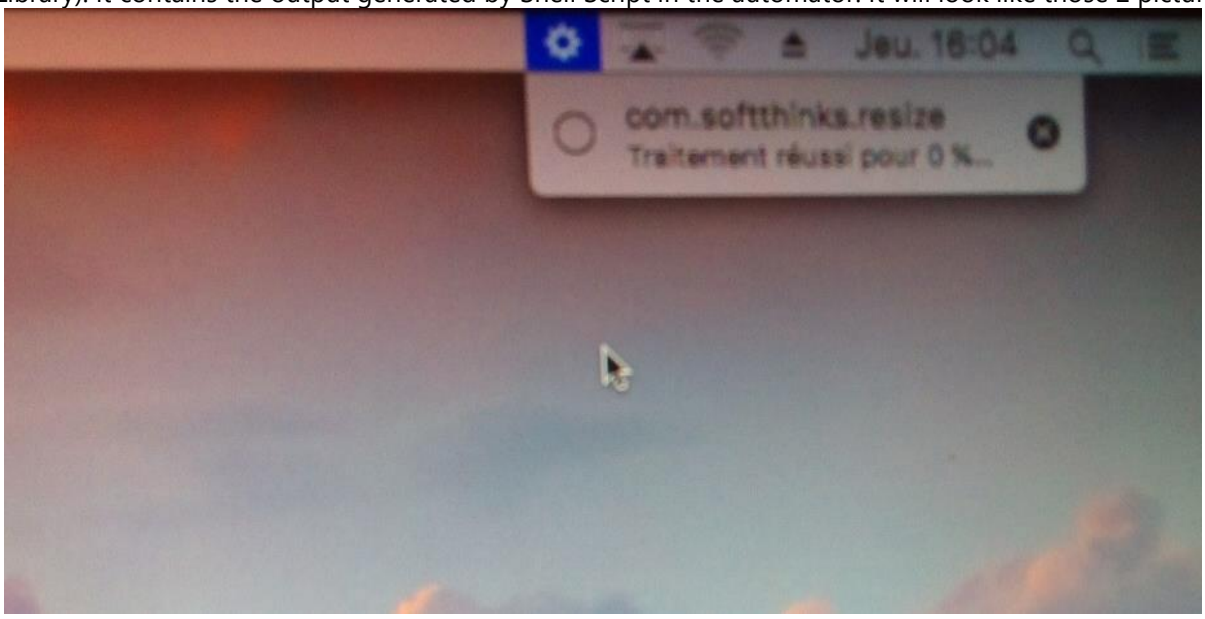
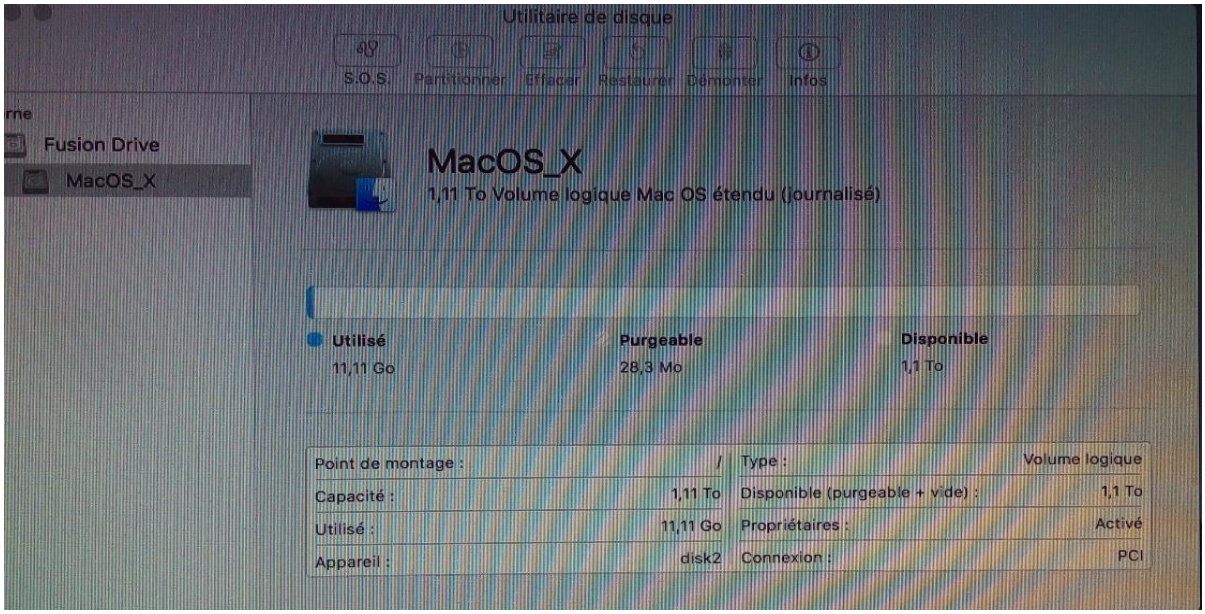
9. On first boot, once the user has setup his account, the setup assistant will be executed and the System Volume will be extended to its maximum size available. A file ResultResize.txt will be created in Library folder of the current user (~/Library). It contains the output generated by Shell Script in the automator. It will look like those 2 pictures:




You can see that our image of 32GB by disk is expanded to the whole disk capacity of 1.1TB.

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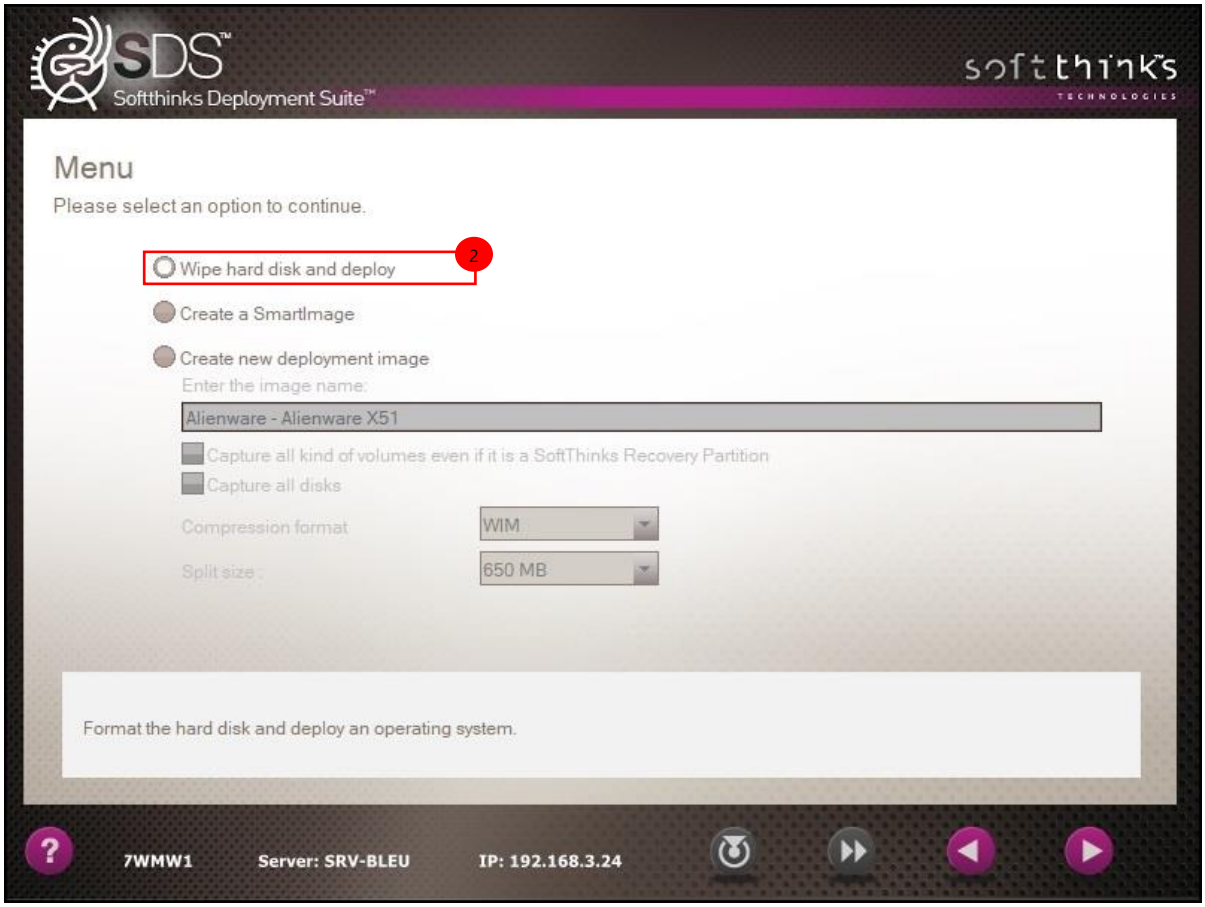
# Linux image

1. Boot your device to the SDS Server

2. Select the image deployment option (2) ("Wipe hard disk and deploy" in our example) and click Next:

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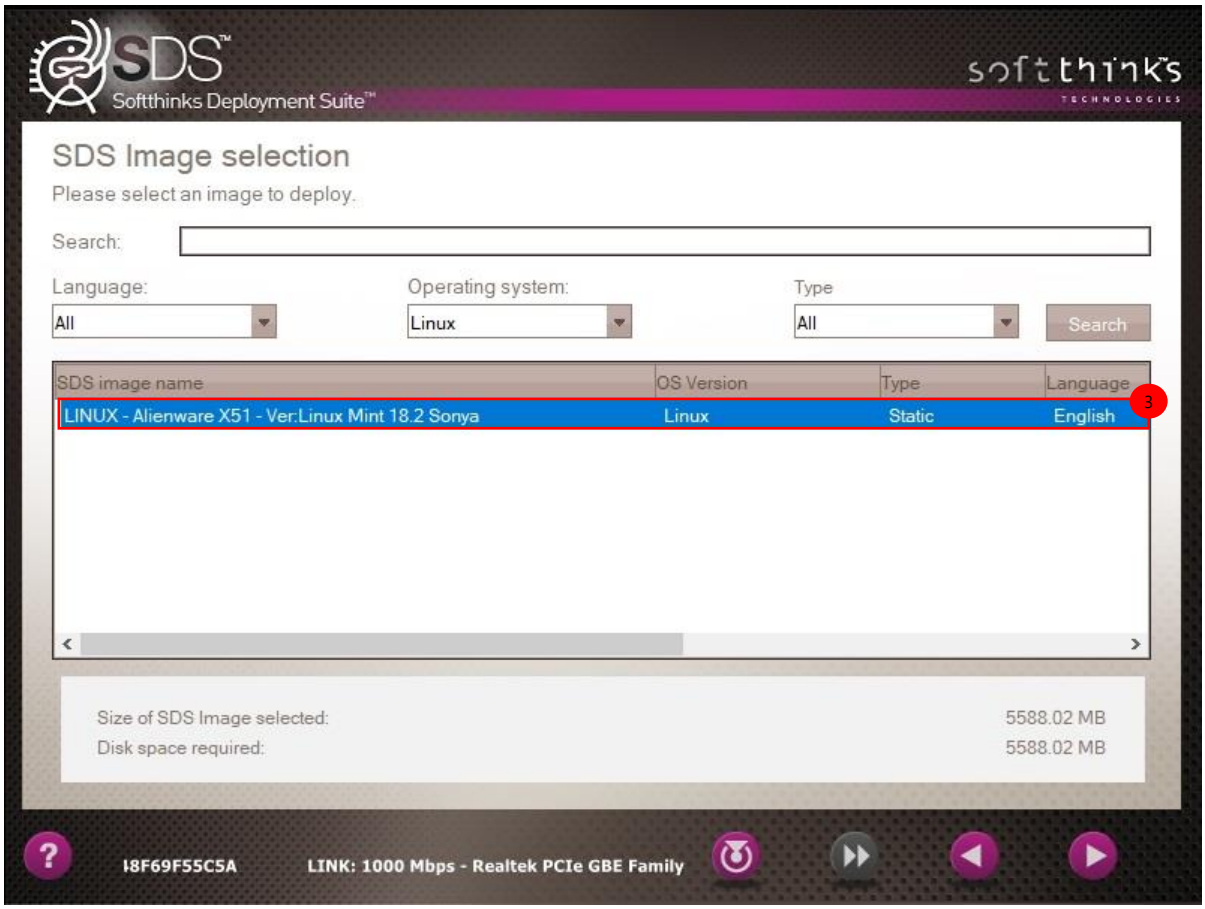
3. Select the Linux image and click Next:

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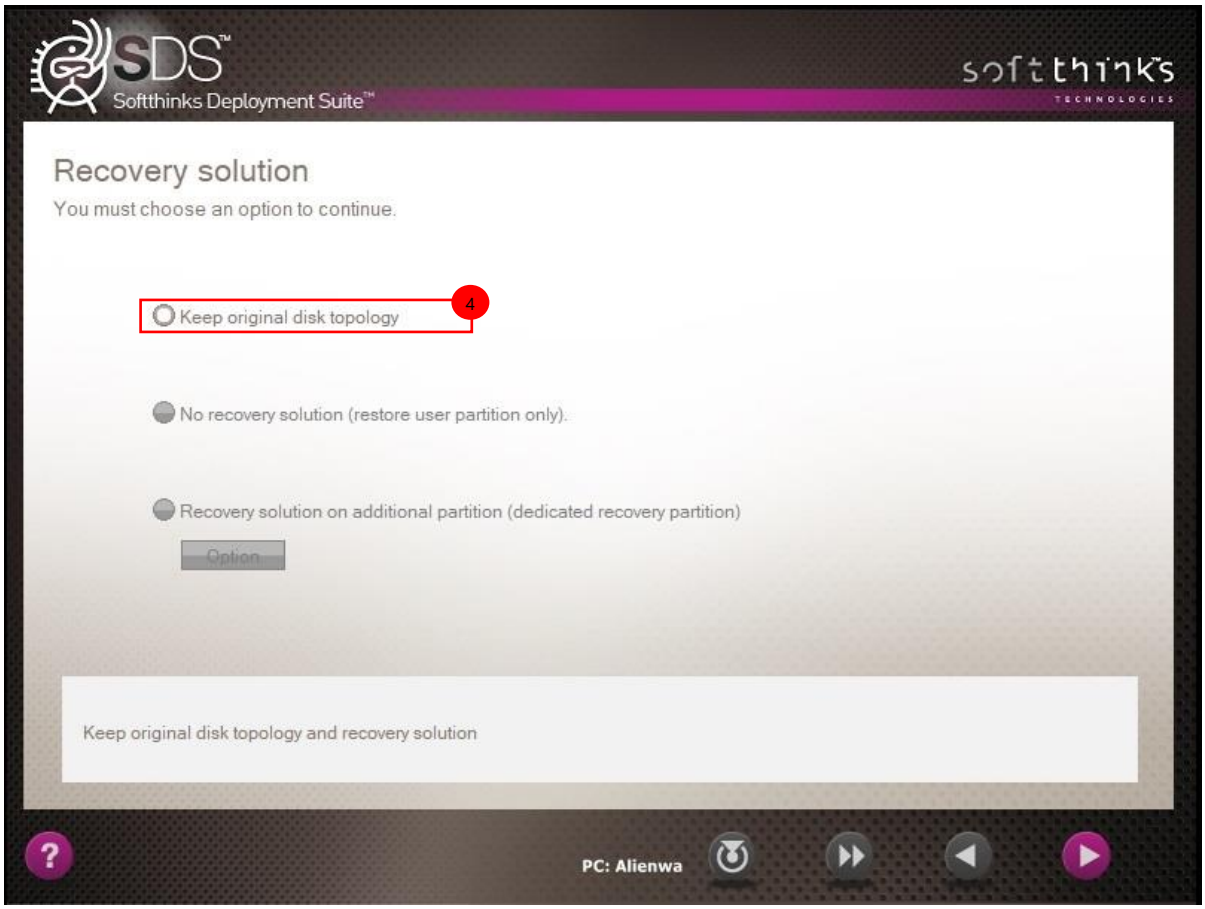
4. Choose “Keep original disk topology” option and click Next:

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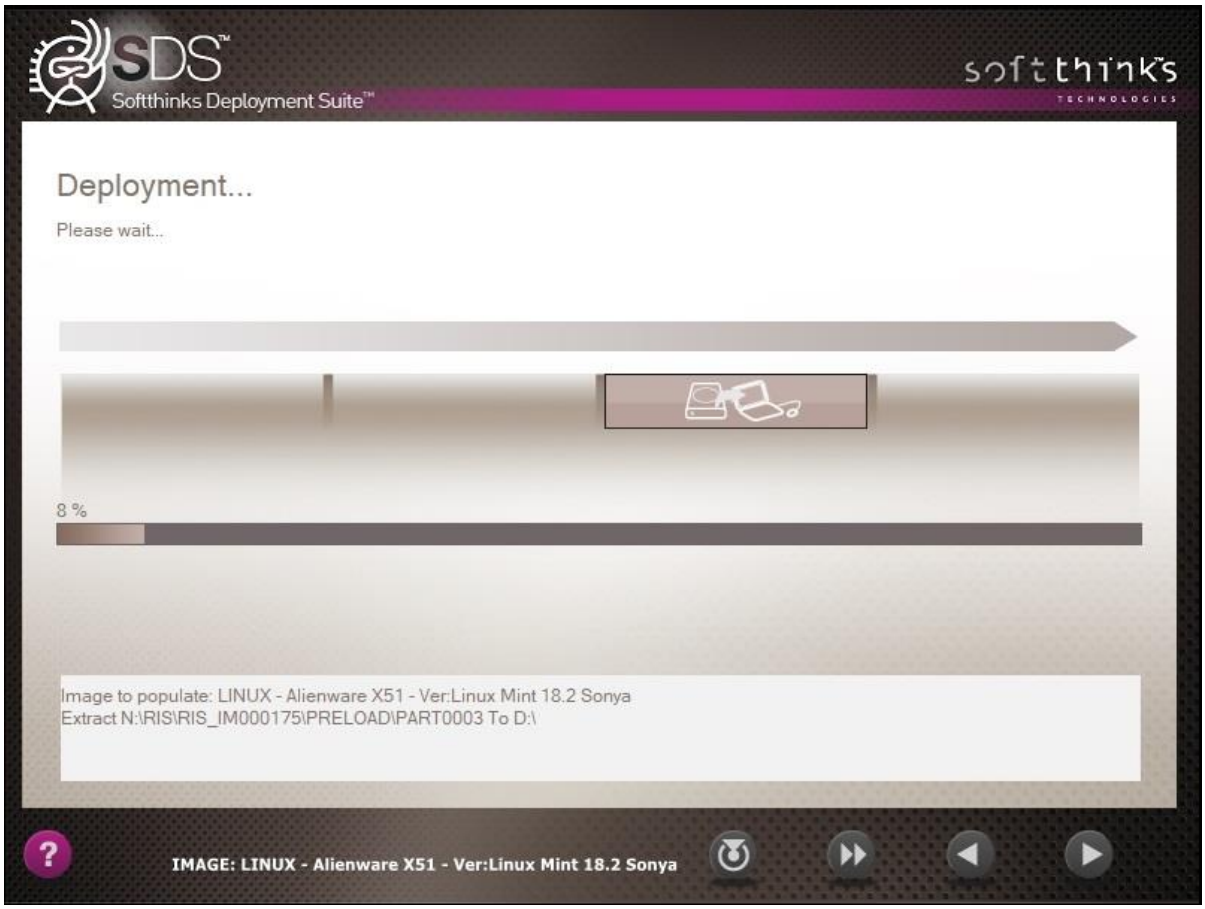
5. You image is now being deployed:

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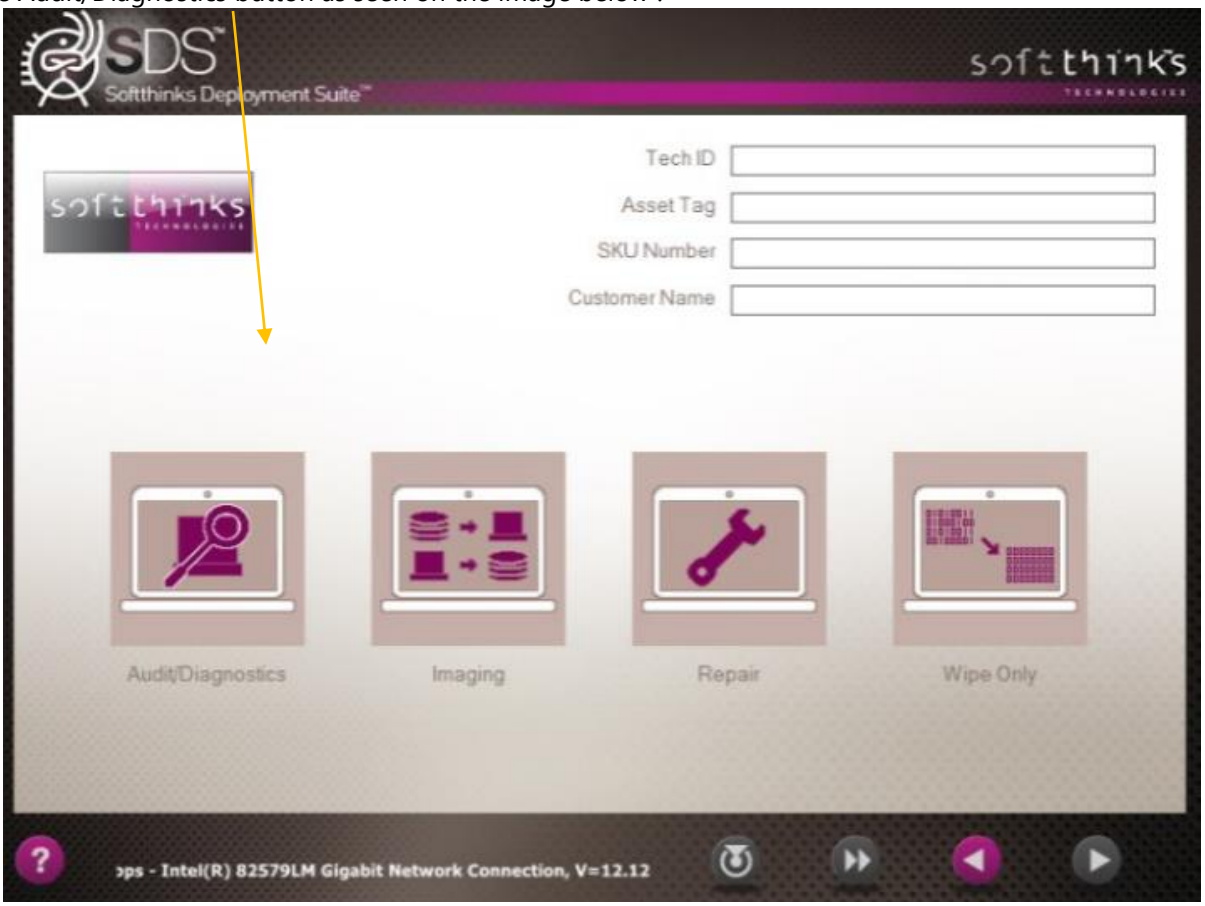
# Auditing and/or Diagnosing a Windows or macOS device

1. Click the Audit/Diagnostics button as seen on the image below :

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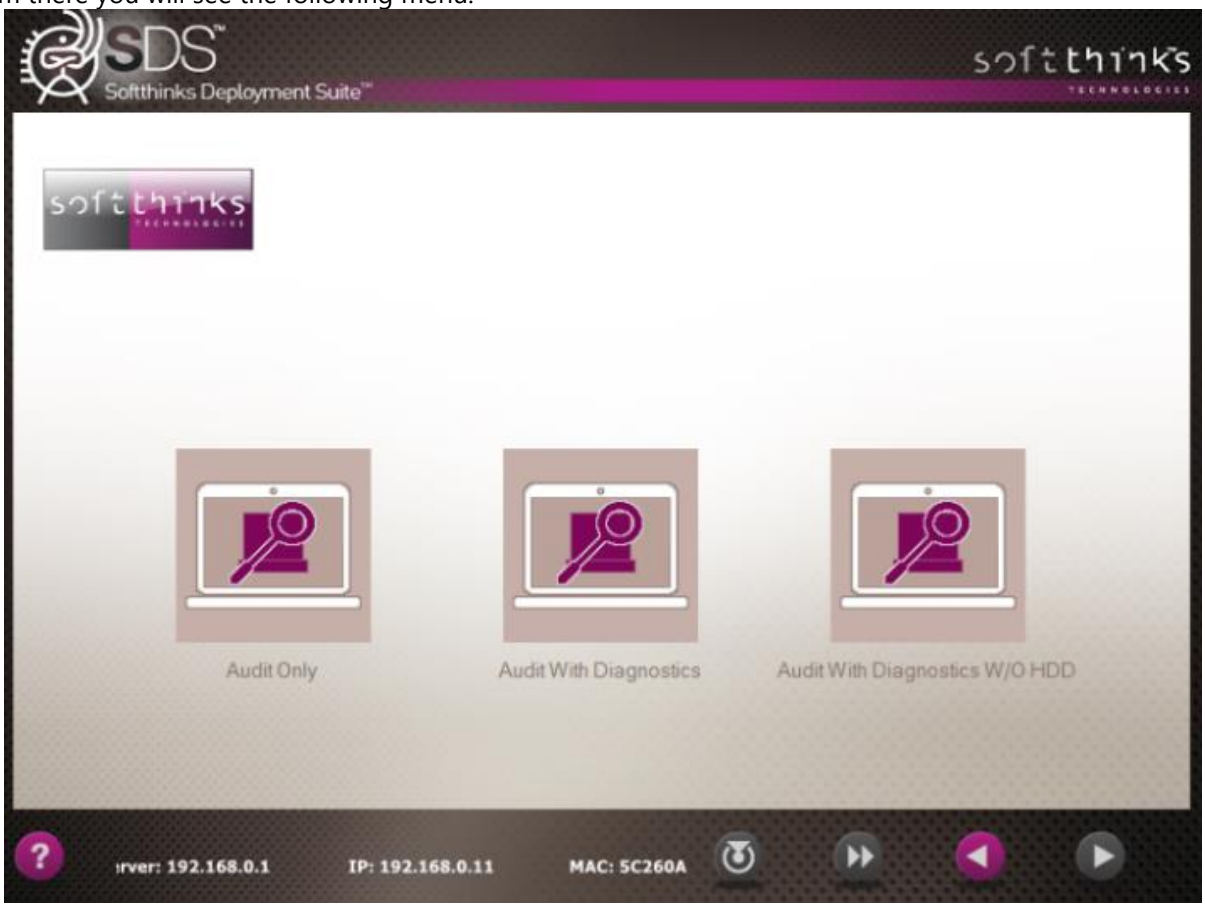
2. From there you will see the following menu:

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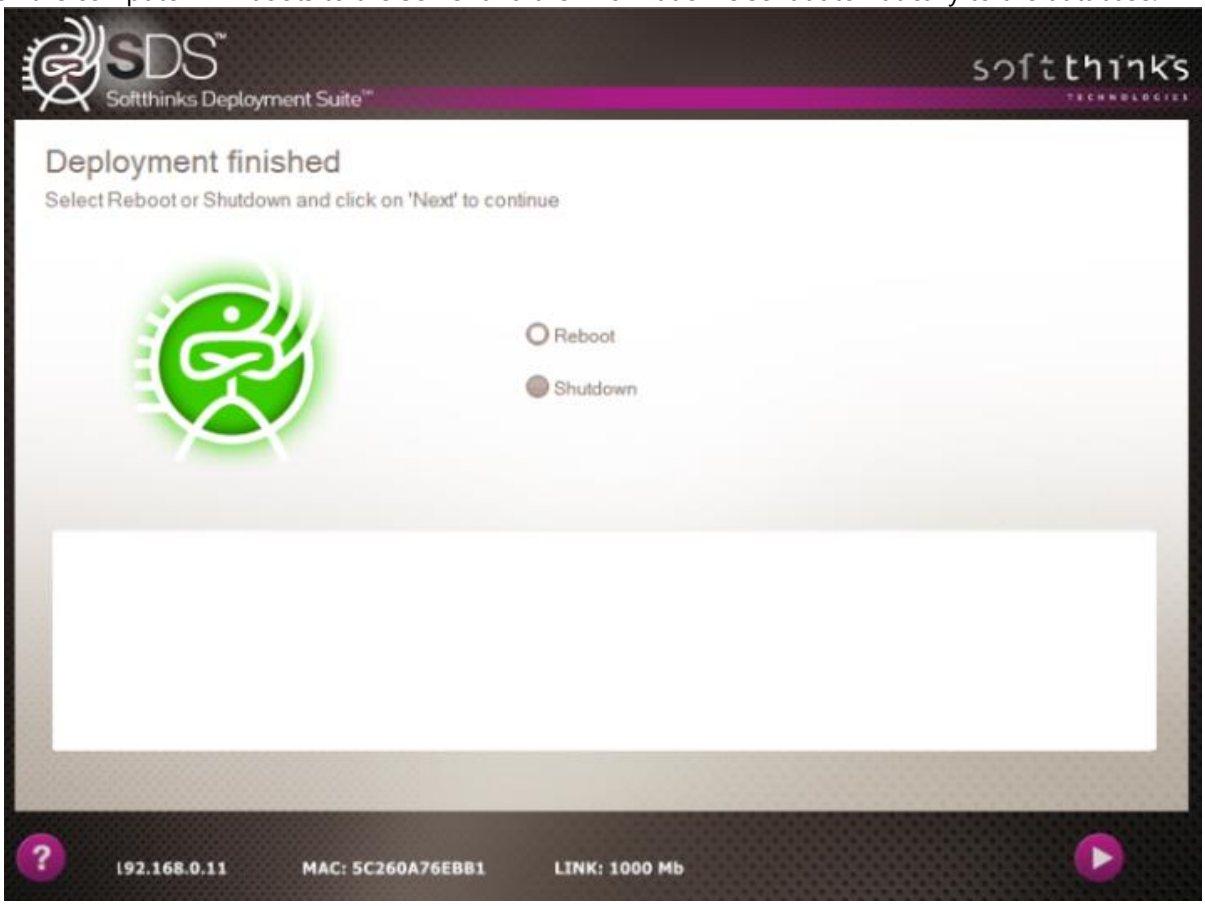
3. Clicking on the Audit Only button will take you to the Deployment Finished screen as the Audit is actually completed when the computer PXE boots to the Server and the information is sent automatically to the database:

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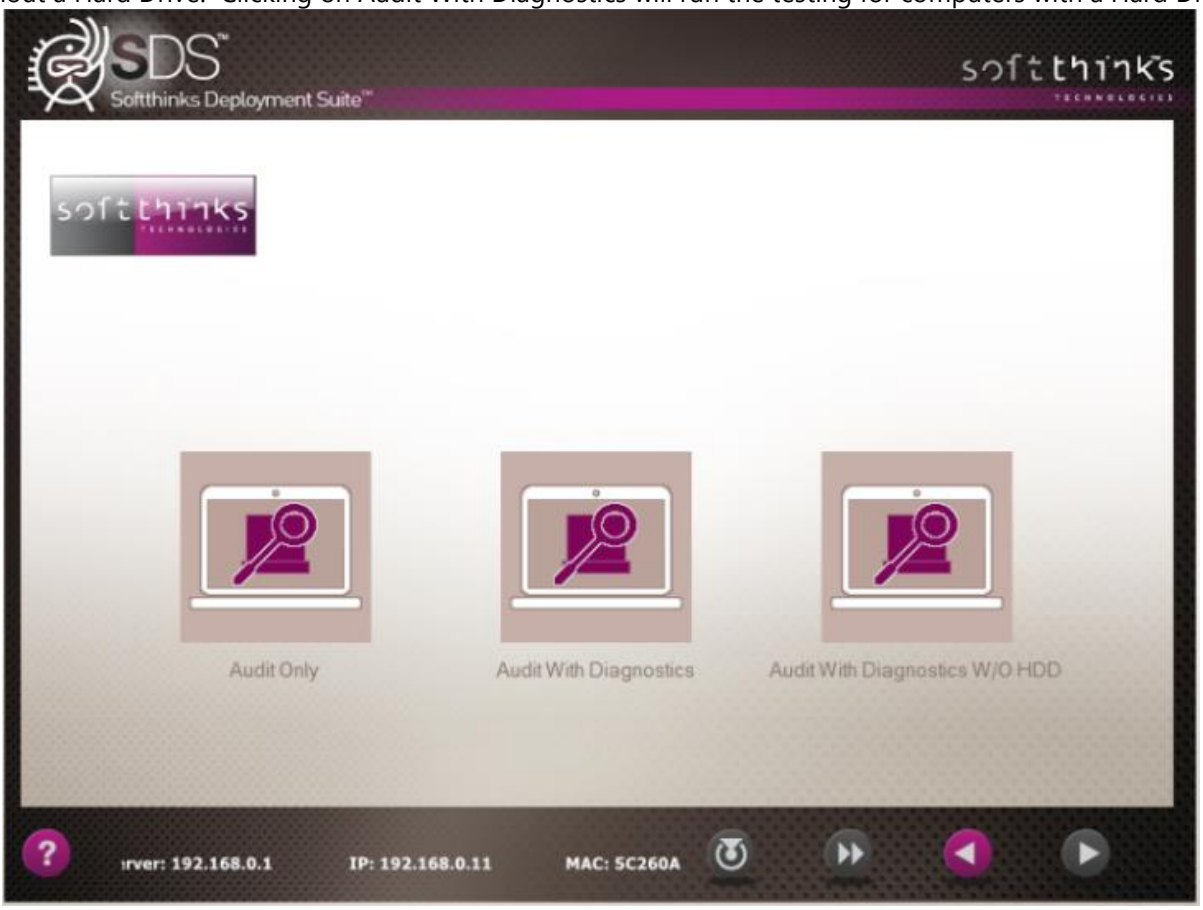
4. You do not need a Hard Drive in the computer to run the SDS software on it. You can diagnose a computer with or without a Hard Drive. Clicking on Audit With Diagnostics will run the testing for computers with a Hard Drive.

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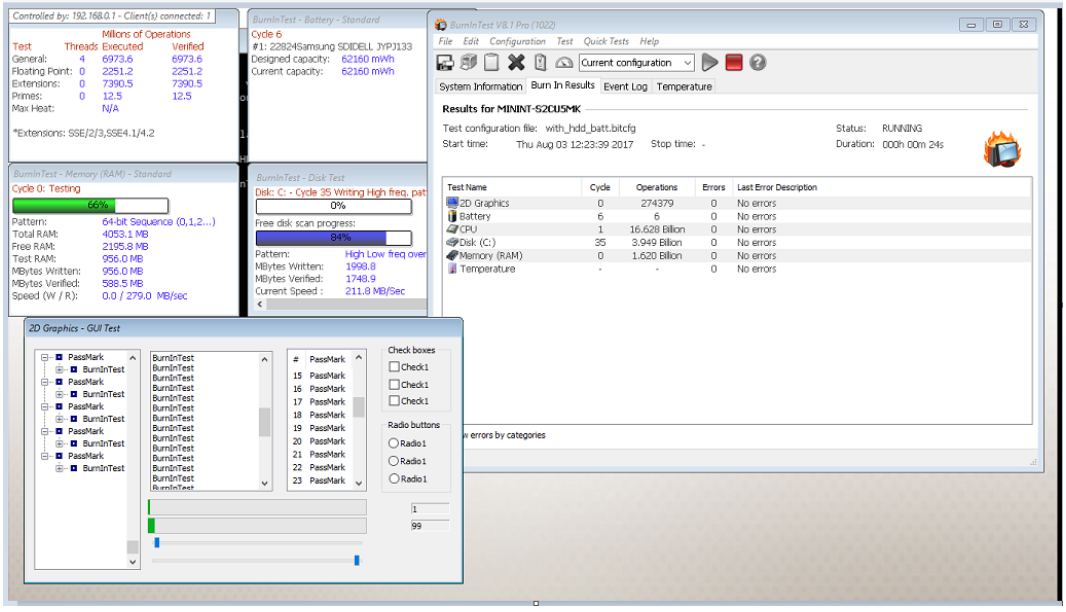
5. The first test will be a SMART test for the Hard Drive if the SMART Technology is present in the Hard Drive. If SMART Technology is not available on the Hard Drive, it will perform a random 5% Read/Write sampling of the Drive.

6. Once the SMART testing is completed, then the BurnInTest will start. These tests will run simultaneously and independently from the technician. This can be modified to test any component that is not driver related (CPU, RAM, Hard Drive, Battery, Temp, 2D Graphics, Keyboard, etc.), and will run for as long as you want with as much stress as you want to put on it.



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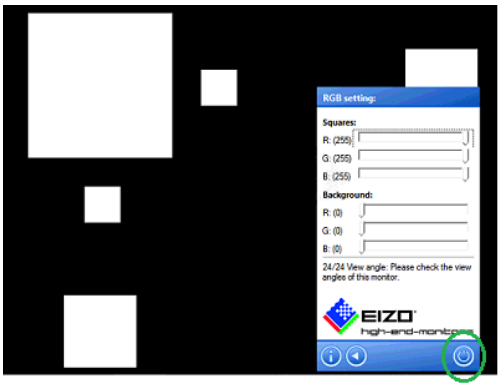
7. Tests not shown above that can be run before the simultaneous testing begins include the Eizo Monitor test :

To perform this test, select the play arrow in the lower right corner. This will start a series of display tests such as color display and dead pixel identification, and etc.
On the final screen below you will select the “close” button highlighted below to move to the next set of testing.

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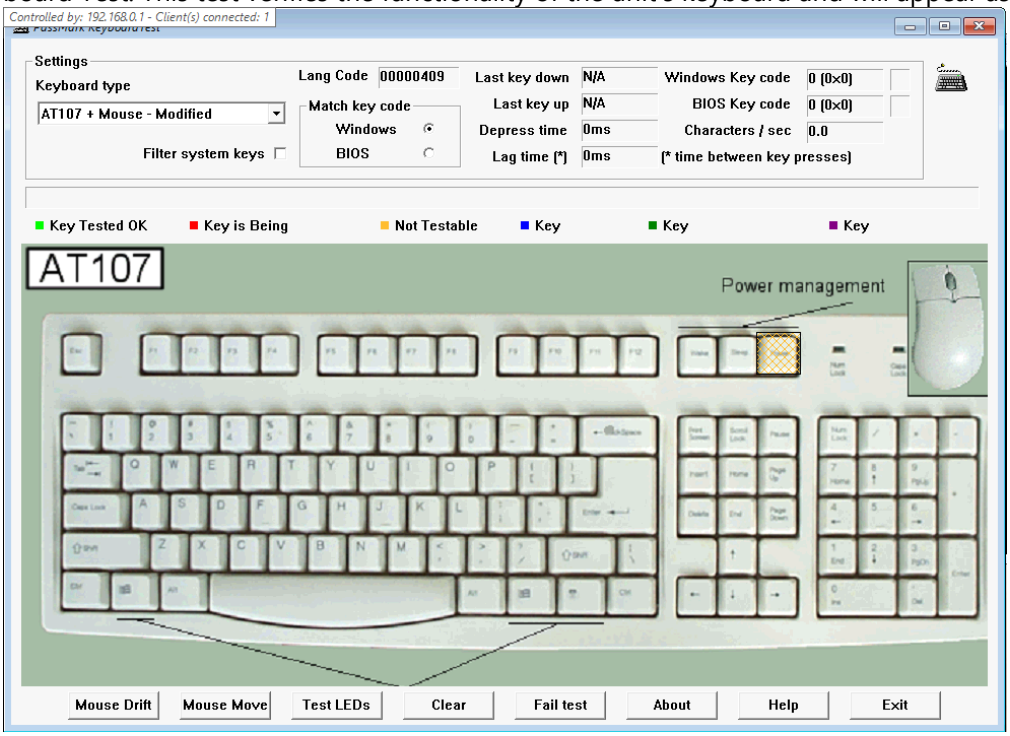
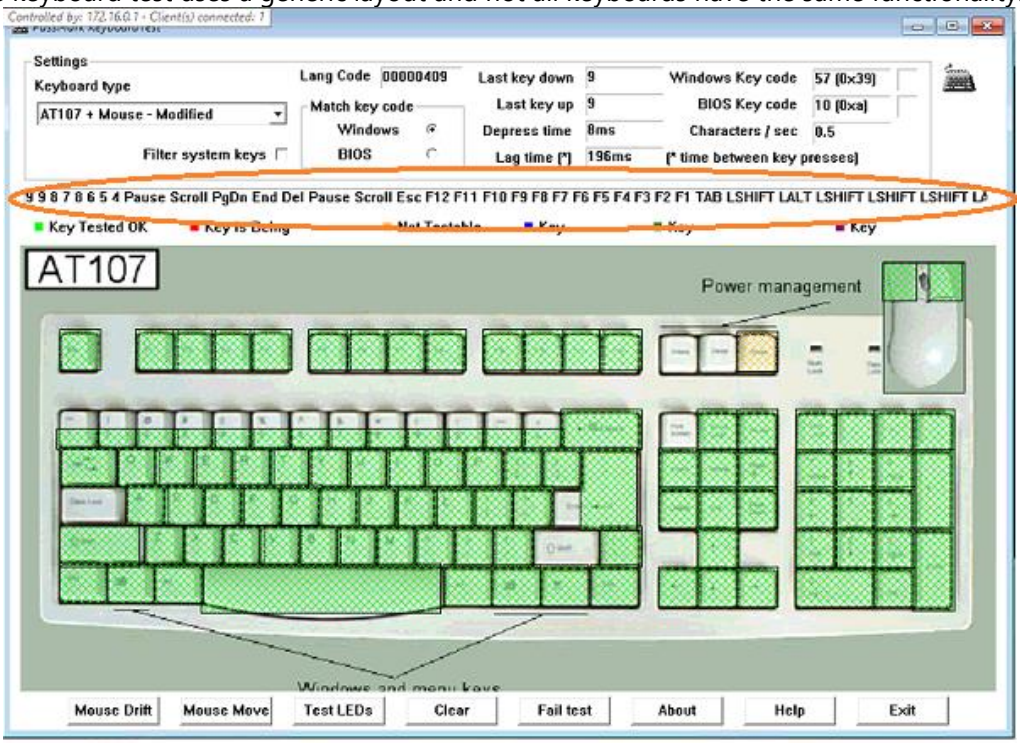
8. And the Keyboard Test. This test verifies the functionality of the unit's keyboard and will appear as the image below:




For this test you will click the touchpad buttons and press all keyboard keys and watch the screen for a response to the corresponding keystroke. You will also be able to see the keystroke in the area of the test circled in the next image. This image is an example of a passed keyboard. Notice that not all keys are highlighted in Green. This is because the keyboard test uses a generic layout and not all keyboards have the same functionality.




Once the Keyboard test has been completed select EXIT in the lower right corner on the screen. This will bring up the following: Select Yes-Pass Keyboard or No-Fail Keyboard to continue.

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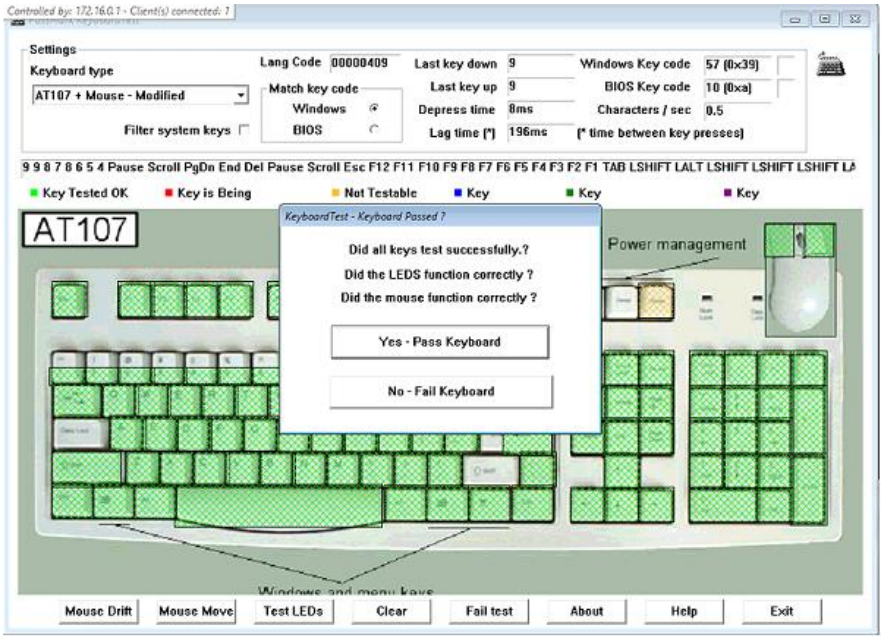
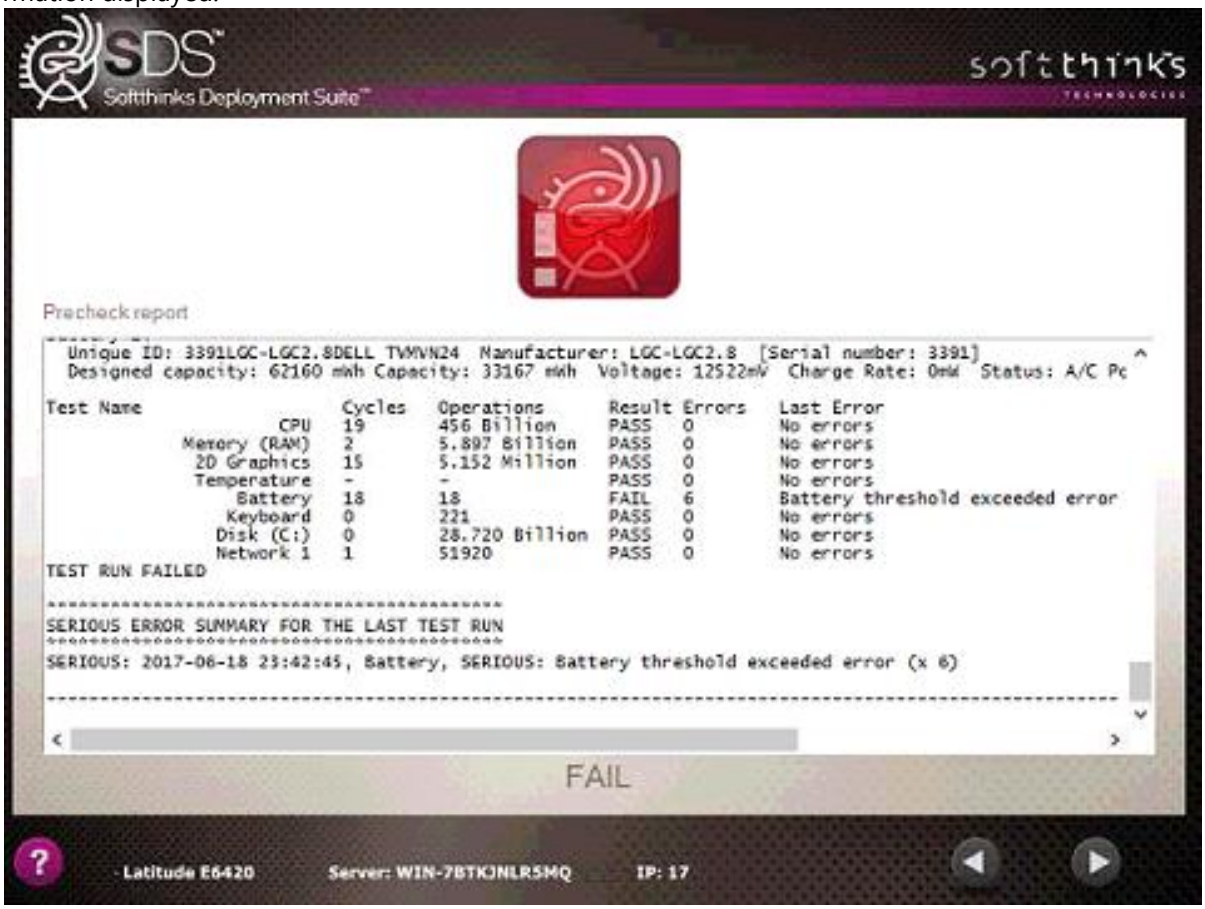



9. After the testing is completed, if a test fails you will see a screen similar to the one below: The one below is for a Battery that failed for not being able to charge past 75% of its battery threshold.
   At this point the system will not continue. You will have to shut down the unit manually after you review the information displayed.

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10. If the unit passes all tests the following screen will be displayed:

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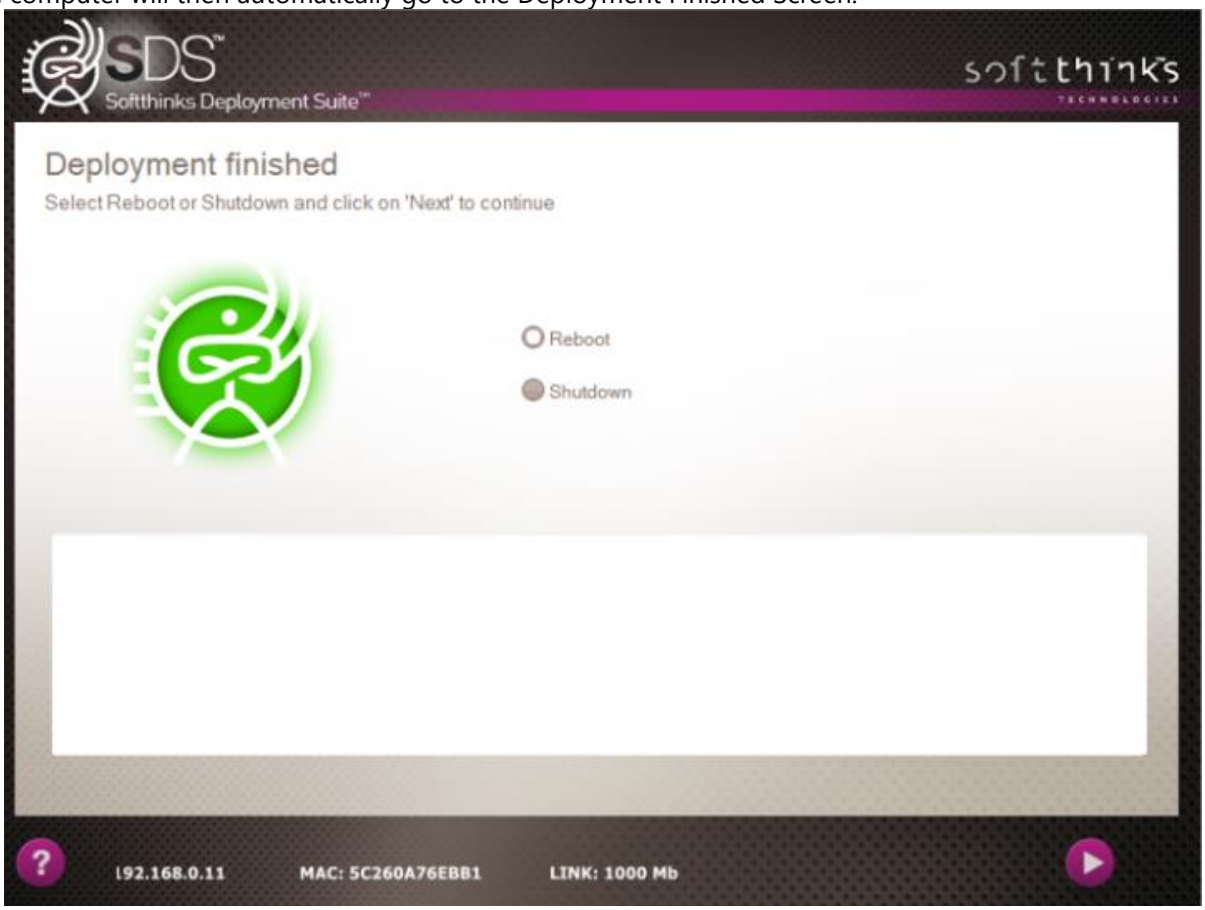
11. The computer will then automatically go to the Deployment Finished Screen:




You can then choose to Reboot or Shutdown the computer at this point.

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# Wiping a device

SDS can wipe any HDD and SSD (or removable drives as memory cards if needed), even with MS Bitlocker, and HPA/DCO technologies* (if your target disk already has an HPA / DCO installed, we can deactivate / remove HPA and remove DCO before a wipe operation).

All cards compatible with CSMI protocol *(Common Storage Management Interface)* are supported. LSI HBA SAS/SATA cards flashed to IT firmware are also supported through LSI utility SASxIRCU.exe, which is working under WINPE 10.240.
Some cards not compatible with CSMI could work if a dump tool exist as third party to list disk SAS address.

SDS wiping process is certified by ADISA:

SDS supports the 19 most popular wiping protocols:

0 - Basic 0
1 - Basic random character
2 - U.S. Standard, DoD 5220.22-M
3 - U.S. Standard, DoD 5220.22-M (e)
4 - U.S. Standard, DoD 5220.22-M (ECE)
5 - US Army AR380-19
6 - Peter Gutmann
7 - Bruce Schneier
8 - German VSITR
9 - Russian GOST P50739-95
10 - NAVSO P-5239-26 (RLL)
11 - NAVSO P-5239-26 (MFM)
12 - Canadian RCMP TSSIT OPS-II
13 - US Air Force 5020
14 - U.S. Standard, DoE M205.1-2
15- Delete Partitions
16 - Normal Secure Erase (NIST 800-88)
17 - Enhanced Secure Erase (NIST 800-88)
18 - Sanitize (NIST 800-88)

* HPA (Host Protected Area) and DCO (Device configuration overlay) designate a hidden area on many of today's hard disk drives.
Some Standard Basic wipe algorithms like DOD include verification during the wipe process.

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You could also install thumbprint after wipe operation, install legacy boot loader reflecting wipe result or simply create a data partition on the disk to get it ready to use.

SDS 18.0 added the ability to have thumbprint string loaded from a file rather than specified in the script. This allows for different thumbprints to be used.  This file size is limited to 512 bytes (since a disk sector is 512 bytes).

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# Rack Mode

SDS Wipe solution supports CSMI compliant racks (without limitation on the number of ports).

The Wipe Arrays can be purchased from SoftThinks or we can tell you the components needed to build them yourself.

Please refer to How to setup wipe rack view to enable the Rack view mode.

Note: *In rack mode, you can wipe full disks, not volumes. All other options from the classic mode are available, as fullscreen or window mode, or starting automatically the wipe process.*

Note: *For the moment SDS Wipe rack mode does not support enclosure or expander.*

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# SSD wiping though Secure Erase and Sanitize hardware-based protocols

Secure Erase and Sanitize protocols are more dedicated to SSDs since they are quicker (5min for a SSD wiped with Secure Erase / Sanitize vs 120min to wipe a mechanical HDD of the same size) and prevent decreasing their lifetime, but they can be used with mechanical HDDs.

Those protocols are managed directly by the disk firmware itself and so they are usable only on disks supporting them (some NVMe don't support those protocols).

Both can be used through ATA / SATA / SAS card (CSMI protocol compliant), but not through USB.

The target disk has to be configured as AHCI in the BIOS.

Secure erase protocol does not provide progression or status of the operation whereas for Sanitize protocol a progression is available with a time remaining but it depends on the disk firmware capabilities.

In addition, the abort operation is not possible (not supported by protocol)

Once a disk started to wipe itself you could not interrupting it is like secure erase command

If Secure Erase or Sanitize protocol are not possible, we will switch back to a default wipe algorithm which can be customized or raise an error.

## Secure Erase

- Normal: write 0 or 1, depending of disk manufacturer
- Enhanced: write a predefined pattern

## Sanitize

The sanitize protocol supports 3 modes:

- Block Erase Ext:
  The BLOCK ERASE EXT command starts a block erase sanitize operation (i.e., a sanitize operation (see 4.17.4) that uses the block erase method on the user data areas, including user data areas that are not currently allocated (e.g., previously allocated areas and physical sectors that have become inaccessible)) to cause the user data to become irretrievable.
- Crypto Scramble Ext
  The CRYPTO SCRAMBLE EXT command starts a crypto scramble sanitize operation (i.e., a sanitize operation (see 4.17.4) that changes the internal encryption keys that are used for user data) causing the user data to become irretrievable.
- Overwrite Ext
  The OVERWRITE EXT command starts an overwrite sanitize operation (i.e., a sanitize operation to overwrite the internal media with a constant value) that fills physical sectors within the Sanitize operation scope with a four-byte pattern specified by the OVERWRITE PATTERN field of the command. The host also specifies a count for multiple overwrites and whether to invert the four-byte pattern between consecutive overwrite passes.

SDS will choose the first available mode in order to get the best performance and compatibility.

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# Example of wipe user interface

1. Select the Wipe Only Button from the Welcome Screen:

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2. In the next screen below, you will be asked to choose the wipe algorithm: SoftThinks ADISA Certified Single-Pass Basic 0 wipe, or the 3-Pass U.S. Standard, DoD 5220.22-M wipe. You will also have the choice to do the wiping with or without hardware testing of the computer or Array that the Hard Drives are in:

In addition, you could also be informed about SMART disk status (OK/Bad/Warning/Unknown colored cross) before wiping a disk. It will save your time and will avoid you refurbishing crappy disk.

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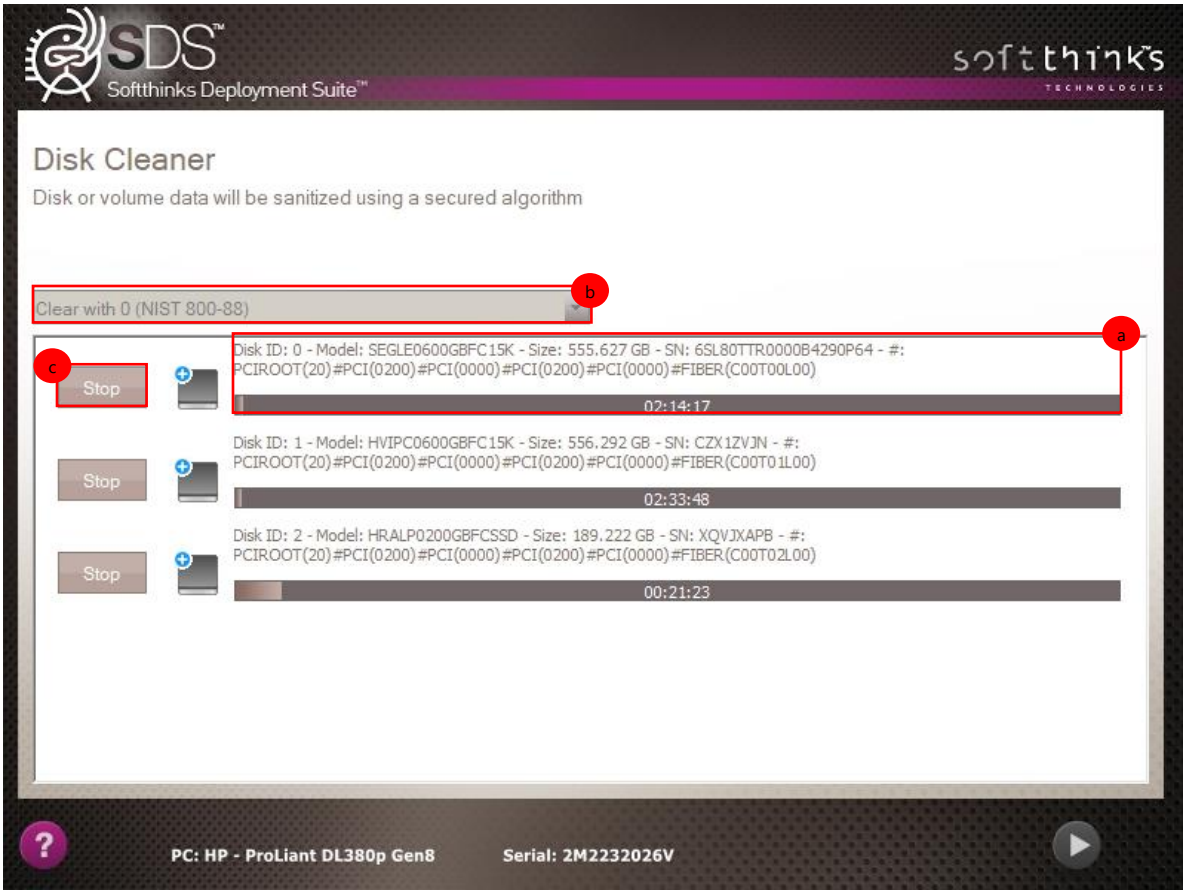
3. a) This screen displays the Hard Drive information and progress of the wipe (a). Any Hard Drive that is found in the computer will be wiped with the same protocol and listed below. The STOP button will cancel the wipe in progress. If successful, a screen will pop up with a "green" pass symbol. If the wipe fails for any reason the "red" fail symbol will display.




b) In the rack mode, the screen looks like one of the screenshots below (the number of lines and columns can be customized as explained in How to setup wipe rack view):

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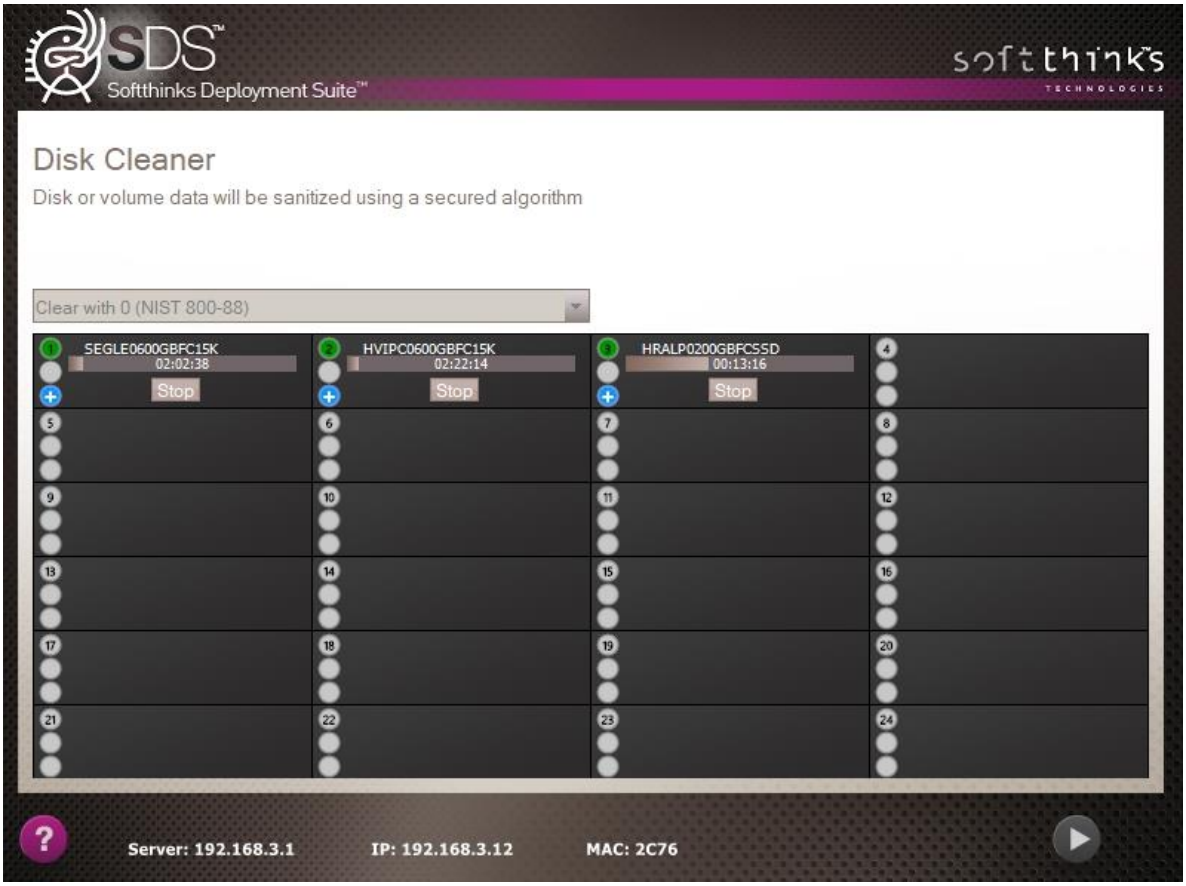


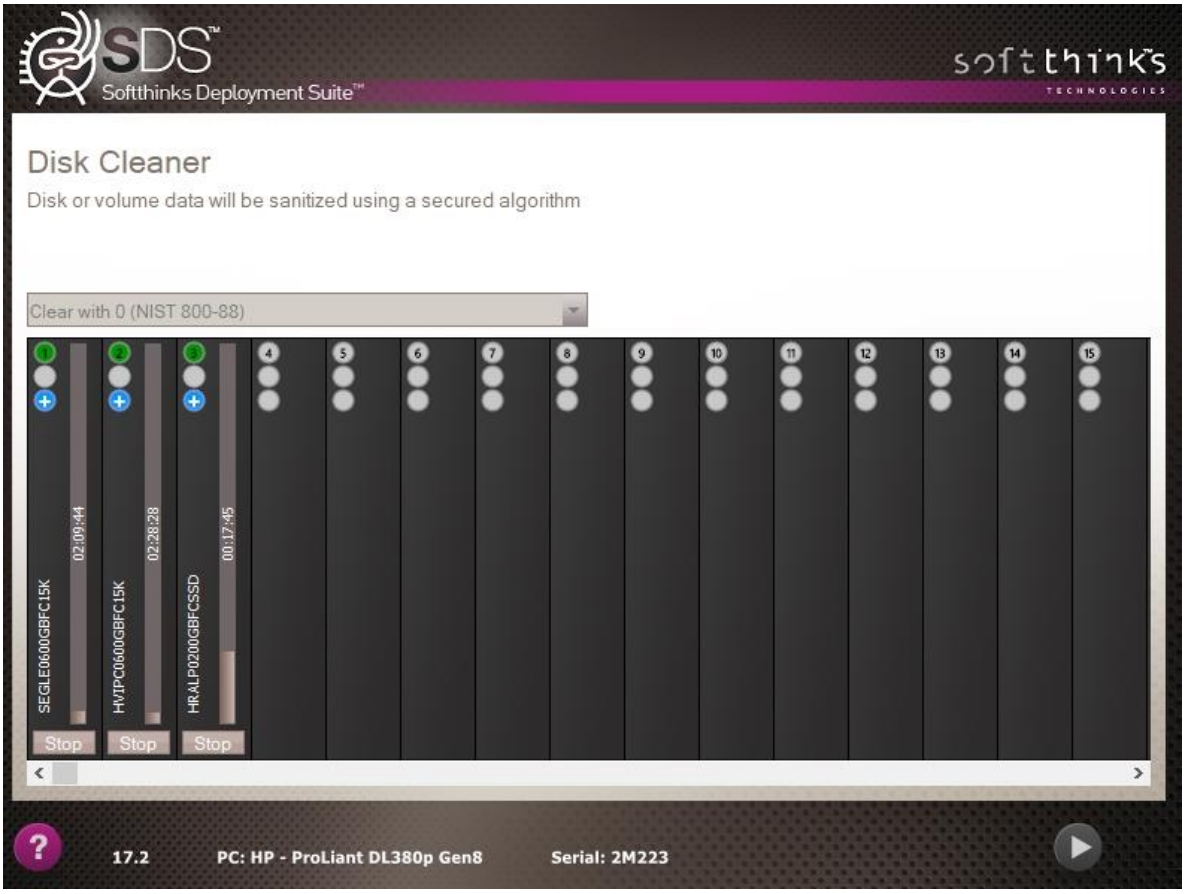


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The 1st LED indicates if a device is plugged at this location in the rack:

- No device
- Device present

The 2nd LED shows if the wipe process completed successfully or not:

- No wipe in progress, or wipe not completed
- Wipe completed successfully
- Wipe failed

The 3rd LED corresponds to the SMART status:

- Unknown
- Good
- Caution
- Bad

Note: *If the SMART status is unknown you cannot use secure erase or Sanitize methods.*

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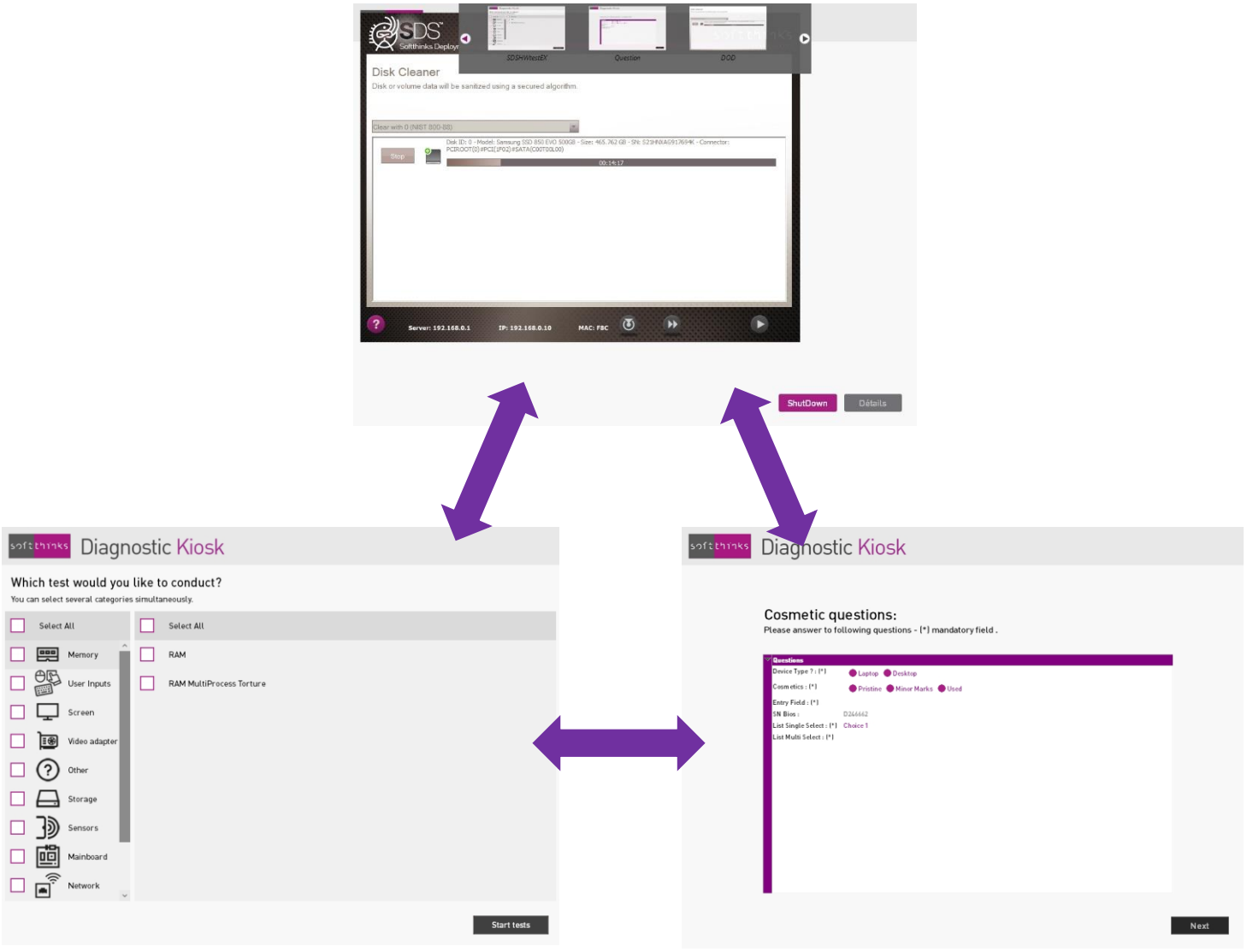
# Multitasking during wipe operations

Wipe process can take time and so it can be useful to perform other actions during this operation, as running hardware diagnostics and/or answering some cosmetic or other customized questions on device.

SDS 20.0 added the possibility to run several operations in parallel and to switch between them, allowing you to save time.

You can just press ALT+M to switch between the operations or press SHIFT+ALT+M to display the modules running in the navigation panel which appears on the top to select specifically the operation you want to see:




For the moment, only those operations can run simultaneously but let us know if you would like to run other ones in parallel.

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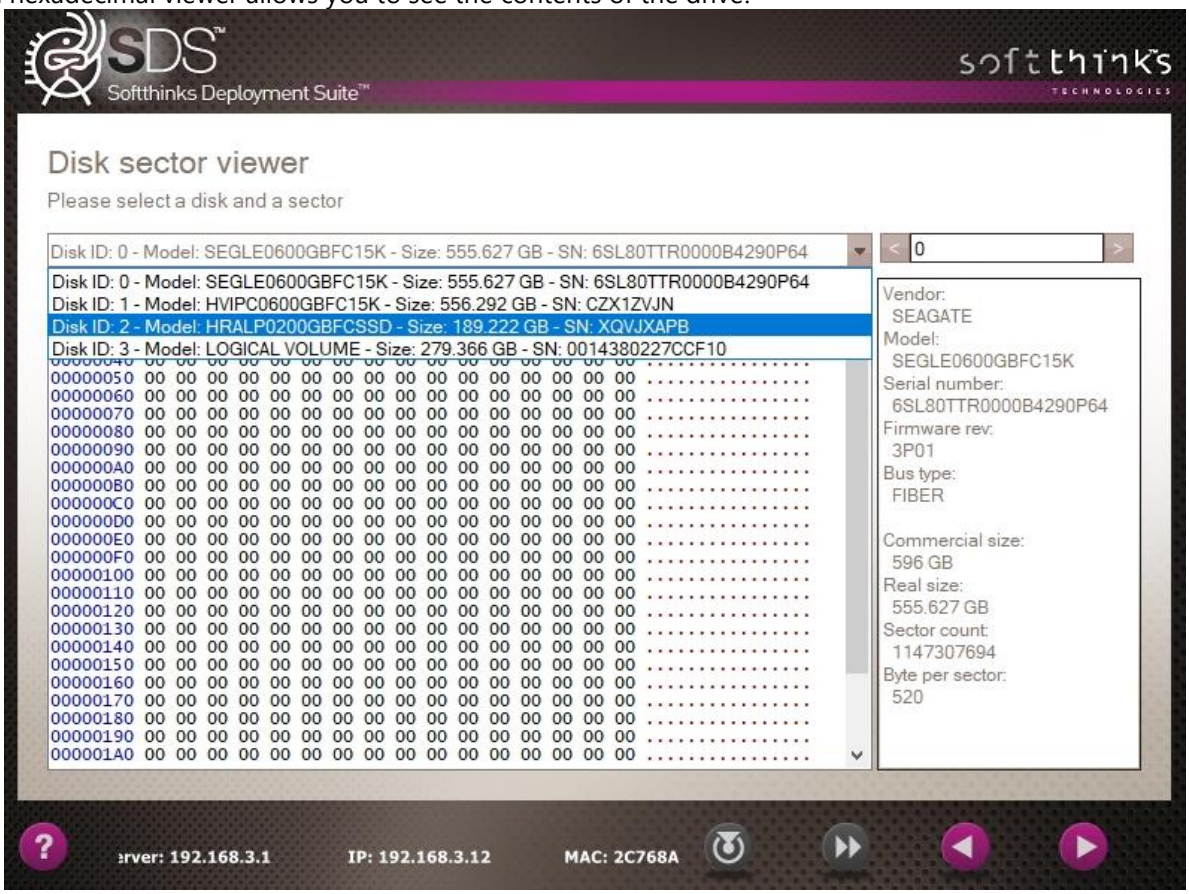
## Hexadecimal viewer

Optionally, a hexadecimal viewer allows you to see the contents of the drive:




## Wipe Report & Label

You can automatically generate, and eventually print it / upload it to FTP / send by email a wipe report and/or a label at the end of the process (See Reporting).

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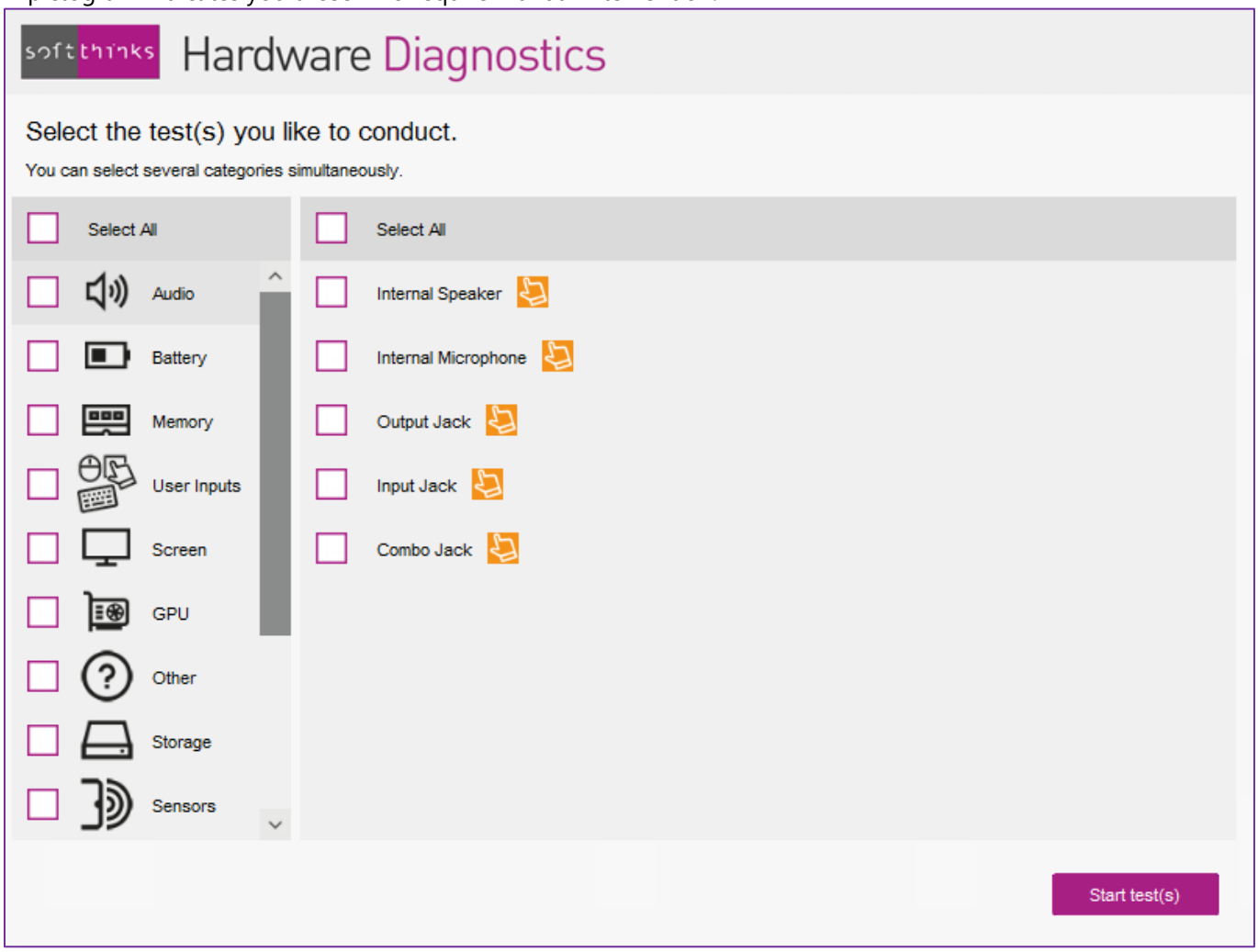
# Diagnosing a device

SDS can diagnose hardware issues on any device which can boot through PXE or from a bootable USB key, as Windows, macOS, Linux desktop PCs, laptops or tablets.

## Tests selection

You can run up to 56 tests grouped by categories. When possible, the tests are fully automated and can be run in parallel, else the pictogram indicates you those who require manual intervention:




This list is totally customizable (you can decide to remove some of them). You can also edit or totally redefine the categories, as well as the labels and bitmaps.

You have also the possibility to dynamically hide tests which are not relevant, either because we automatically detect that the element to test is not present (device without optical drive reader, screen without touch capability) or based on responses made in audit module (for example the keyboard was not supplied with a desktop PC and you don't want to test the operator's keyboard he plugged to use our solution).

You can bypass this selection screen and launch direction different tests profiles that you can customize depending on your needs (quick tests, full tests, quality control tests, stress tests…).

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## List of available tests

| | Test | Test Environment | | | Automated Test [8] | Test Duration |
|---|---|---|---|---|---|---|
| | | Customer OS \| Audit mode | Windows To Go | WinPE | | |
| CPU | General purpose instructions Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | Floating Point Unit Instructions Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | Prime Number Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | MMX Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | SSE Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | SSE2 Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | SSE3 Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | AES Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | Maximum heat Test | ✓ | ✓ | ✓ | ✓ | 10min |
| | CPU Voltage Monitoring | ✓ | ✓ | ✓ | ✓ | 0s (continuous monitoring) [4] |
| | CPU Temperatures Monitoring | ✓ | ✓ | ✓ | ✓ | 0s (continuous monitoring) [4] |
| | CPU Powers Monitoring | ✓ | ✓ | ✓ | ✓ | 0s (continuous monitoring) [4] |
| | CPU Clocks Monitoring | ✓ | ✓ | ✓ | ✓ | 0s (continuous monitoring) [4] |
| | CPU Utilization Monitoring | ✓ | ✓ | ✓ | ✓ | 0s (continuous monitoring) [4] |
| MAINBOARD | Mainboard Voltages | ✓ | ✓ | ✓ [8] | ✓ | 0s (continuous monitoring) [4] |
| | Mainboard Temperatures | ✓ | ✓ | ✓ [8] | ✓ | 0s (continuous monitoring) [4] |
| | Mainboard Fans | ✓ | ✓ | ✓ [8] | ✓ | 0s (continuous monitoring) [4] |
| | USB ports | ✓ | ✓ | ✓ | | time to plug the USB key to each port and detect it |

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| | | | | | | |
|---|---|---|---|---|---|---|
| MEMORY | Standard Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| | Multi-Process Torture Test | ✓ | ✓ | ✓ | ✓ | 1min (customizable) |
| GRAPHIC CARD | GPU Clock Monitoring | ✓ | ✓ | ✓ | ✓ | 0s (continuous monitoring) (4) |
| | GPU Voltage Monitoring | ✓ | ✓ | ✓(8) | ✓ | 0s (continuous monitoring) (4) |
| | GPU Temperature Monitoring | ✓ | ✓ | ✓(8) | ✓ | 0s (continuous monitoring) (4) |
| | 2D Local Video memory Test | ✓ | ✓ | ✗ | ✓ | 1min |
| | 2D all available memory Test | ✓ | ✓ | ✗ | ✓ | 1min |
| | 2D Lines and bitmaps test | ✓ | ✓ | ✓ | ✓ | 1min |
| | 2D EMC scrolling characters test | ✓ | ✓ | ✓ | ✓ | 1min |
| | 2D EMC reference test pattern test | ✓ | ✓ | ✗ | ✓ | 1min |
| | 3D Test | ✓ | ✓ | ✓(3) | ✓ | 1min |
| STORAGE | Disk Health Status | ✓ | ✓ | ✓ | ✓ | 0 to 5s |
| | Disk SMART Attributes | ✓ | ✓ | ✓ | | time for the operator to review the attributes |
| | Disk Short SMART Test | ✓ | ✓ | ✓ | ✓ | some minutes (5) |
| | Disk Long SMART Test | ✓ | ✓ | ✓ | ✓ | 10 min to several hours (5) |
| | Disk Random Read Test | ✓ | ✓ | ✓ | ✓ | some seconds to several minutes (5) (6) |
| | Disk Linear Read Test | ✓ | ✓ | ✓ | ✓ | some seconds to several minutes (5) (6) |
| | Optical Drive Read Test | ✓ | ✓ | ✓ | | time to insert the media and get it readable |
| NETWORK | Wired (LAN) | ✓ | ✓ | ✓ | | <5s |
| | Wi-Fi (WLAN) (9) | ✓ | ✓ | ✓ | | <5s |
| | Bluetooth | soon | soon | soon | | |

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| | | | | | | |
|---|---|---|---|---|---|---|
| AUDIO | Internal speaker | ✓ | ✓ | ✓ | | ~1s<br>delay to hear sound played and validate test (1) |
| | Internal microphone | ✓ | ✓ | ✓<br>If driver present | | ~6s<br>delay to record & play sound (1)(2) |
| | Output Jack | ✓ | ✓ | ✓ | | ~1s<br>once device plugged (1) |
| | Input jack | ✓ | ✓ | ✓<br>If driver present | | ~6s<br>once device plugged (1) (2) |
| | Combo Jack | ✓ | ✓ | ✓<br>If driver present | | ~6s<br>once device plugged (1) (2) |
| SCREEN | Dead pixel | ✓ | ✓ | ✓ | | 3s<br>delay customizable |
| | Calibration | ✓ | ✓ | ✓ | | 3s<br>delay customizable |
| | Touchscreen | ✓ | ✓ | ✓ | | <2s |
| | Display ports (10) | ✓ | ✓ | ✓ | | delay to plug a monitor to each port and detect it |
| USER INPUTS | Keyboard | ✓ | ✓ | ✓ | | ~5s<br>depending on keyboard layout |
| | Keyboard Status LED | ✓ | ✓ | ✓ | | <5s |
| | Mouse | ✓ | ✓ | ✓ | | <5s |
| | Touchpad | ✓ | ✓ | ✓ | | <5s |
| | TrackPoint | ✓ | ✓ | ✓ | | <5s |
| BATTERY | Battery Health | ✓ | ✓ | ✓ | ✓ | <10s |
| | Battery Charging Test | ✓ | ✓ | ✓ | | <15s |
| | Battery Drain Test | Soon | Soon | Soon | | Can take several hours. Depends on current battery charge level |
| SENSORS | Accelerometer | ✓ | ✓ | Under investigation | | <2s |
| | Lid Sensor | ✓ | ✓ | ✓ | | ~5s<br>(customizable) |
| OTHER | Card Reader | ✓ | ✓ | ✓ | | time to insert the media and get it readable |
| | Webcam | ✓ | ✓ | ✓<br>If driver present | | <10s |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | Suspend mode | ✓ | ✓ | ✖ | | |

(1) A question is asked once the playback ends but you have the possibility to validate the test as soon as the operator hears the sound.

(2) We currently record during 5s but we will make this delay customizable in the next release.

(3) This test is a functional test and cannot be used for benchmark purpose in WinPE environment since it might not include optimized manufacturer drivers but default graphic drivers.

(4) Those values are monitored in real time during the whole test session and minimum, average and maximum values are saved. You can use them in conjunction with a stress test like the maximum heat test

(5) The test duration differs depending if you test a SSD or a mechanical HDD, and depends on the disk size.

(6) The number of passes, the number of blocks and the size of the blocks are customizable

(7) Automatic tests are executed in parallel when possible (2 tests accessing the same device cannot be run simultaneously) either at the beginning or at the end of the test session

(8) Monitoring depends on driver available in WinPE

(9) Requires a WI-FI access point dedicated to SDS with lowest security possible (OPEN)

(10) HDMI, DVI, DP, VGA

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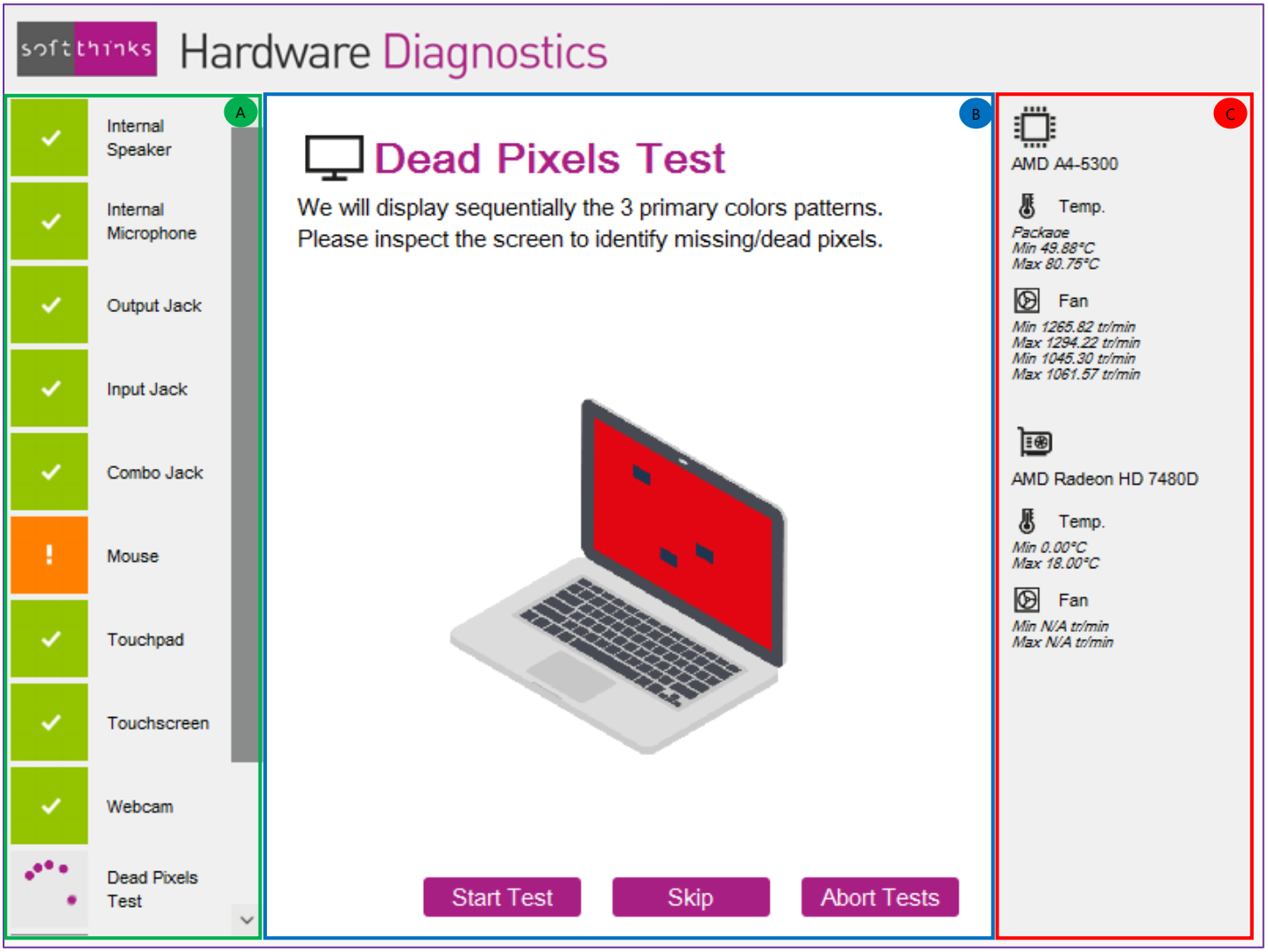
# Tests execution

When the tests are launched, you will see the interface below with the 3 areas:

- the left panel (A) is a scrollable list of the tests to execute with their current status in front of each one (pending/running/passed/failed/skipped)
- the middle area (B) contains the instructions for the manual test which is currently running and the action buttons
- the right panel (C) is dedicated to real time monitoring: temperature, voltage, fan speed of CPU, GPU, mainboard, HDD/SSD

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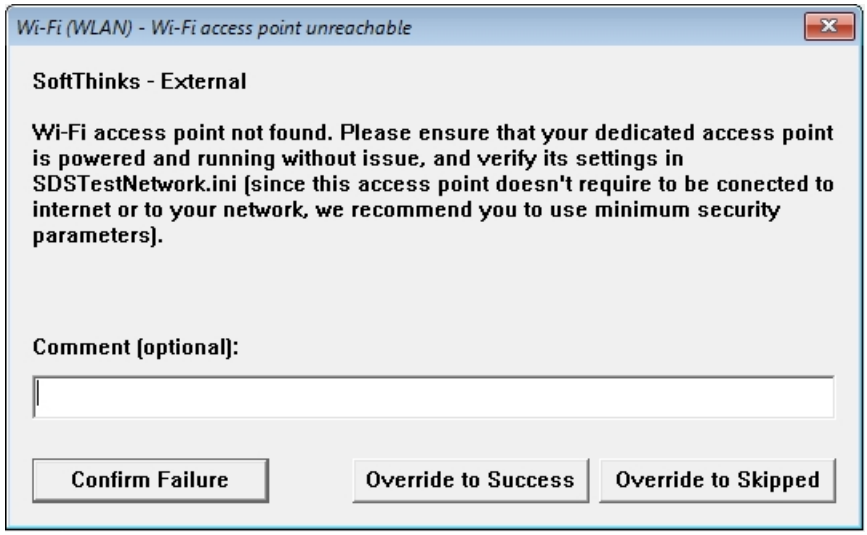
### Automatic Tests Execution

Automatic tests are run simultaneously as far as far possible in order to decrease the diagnostic session delay. As a consequence, they will not have a common UI, or even no UI at all while manual tests are running.

Anyway, you can follow their progression through the animation in front of each one on the left panel.

In some circumstances, we cannot run a test, or conclude on its result, or detect inconsistencies in the information returned by the device. For example, a battery returns a designed charge null or a current full charge equal to its designed capacity aster several years. Another example is that we don't detect the component to test: it can be either missing, defective, or not supported and so we cannot conclude (you can now specify if a component to test is mandatory on a laptop or an All-In-One or other device, and so you can specify a different result if you want).

- In such cases, you can now specify if you want to set automatically the test to succeeded, failed or skipped and we will record in the SQL database the reason why we not able to run/interpret the test.
- Else, you can let the operator decide (and you can specify which possible results you allow per test) and, optionally, enter a comment which will be recorded in the SQL database (and shown on demand in reports and Dashboard), as well as the original reason why we not able to run/interpret the test:

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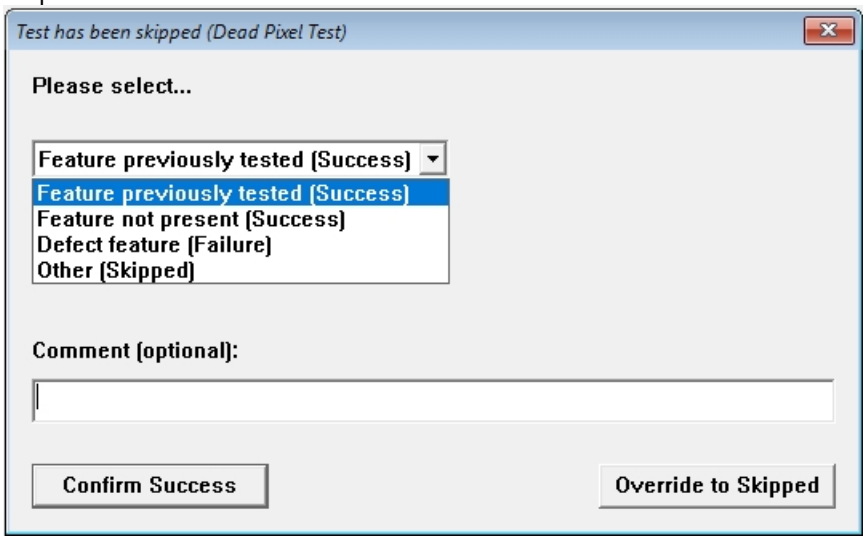
### Manual Test Execution

For each manual test, you will be guided through detailed step by step instructions and explicit animations.

In order to decrease the test duration, buttons and keystrokes are available to set a test as succeeded / failed, skip it, abort it or bypass timeouts when applicable. For example, for the dead pixel test, you will be able to stop and failed the dead pixel test as soon as you see one, display the next pattern by pressing a key without waiting for the customizable delay. For the other full screen test which is the touchscreen one, if the touchscreen is not responding the user will also be able to fail it without waiting for the customizable timeout delay.

Optionally, you can ask the operator to indicate the reason why he skips a test for trackability purpose. If so, he will have to choose one of the reasons you will have predefined and this reason will be saved in the logs and in the database so that you can show it on reports and wipe certificates:




For each reason, a customizable result is associated by default and appears between parenthesis and, as for automatic tests, you can allow the operator to change the result and add optionally a comment which will be recorded in the SQL database (and shown on demand in reports and Dashboard).

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# Tests description and customization

## CPU tests

Different types of load

To ensure various components within the CPU are loaded, many different types of CPU opcodes (operation types) are performed. The CPU test types are selectable by the user. The types of operation are listed in the help file (reproduced here):

The CPU test exercises and verifies a wide range of CPU instructions, at user specified loads. The user selectable sub-categories of the CPU test are:

- General purpose instructions (x86)
- Floating Point Unit (FPU) instructions (x87)
- CPU extension instructions (x86 extensions). The specific extension instructions may be selected: MMX, 3DNow!, SSE, SSE2, SSE3, SSE4.1, SSE4.2 and SSE4a.
- Prime number test
- Maximum heat test

The numbers displayed in the test window for this test represent how many millions of CPU operations have been performed and verified. Each different math's test is run for half a second. After all tests have been run the cycle count is incremented. The duty cycle and the CPU speed determine how many operations can be processed during the half second period. Note however that if only the Maximum heat test is selected, then the duty cycle is set to 100% and a single cycle is defined to be 1 trillion CPU operations.

By default, a CPU test is run on each CPU core. The number of CPU tests running a particular sub-category is shown in the test window in the "Threads" column.

The sub-categories of this test are described below.

### General purpose instructions

This test exercises and verifies correct operation of CPU instructions from the following groups:

- Integer mathematics (e.g. add, subtract, multiply and divide)
- Data transfer instructions (e.g. pushing/popping data to/from the stack)
- Bitwise logical instructions (e.g. bitwise and/or/xor)
- Shift and rotate instructions (e.g. shift data left x number of bits)
- Logical instructions (e.g. equals)
- Control transfer instructions (e.g. jump on x greater than y)
- String instructions (eg. copy a text string)

Known and random data sets are used to exercise and verify correct operation. On 32-bit systems, 32-bit data sets are used. On 64-bit systems, 64-bit data sets are used. The random numbers are generated regularly to provide a larger data set, as well as ensure that the CPU caches overflow and that this mechanism is tested.

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### Floating Point Unit (FPU) instructions

This test exercises and verifies correct operation of CPU instructions from the following groups:

- Floating Point math (e.g. add, subtract, multiply and divide)
- Transcendental's (e.g. sin, cos)
- Load constants (e.g. load Pi)

Known and random data sets are used to exercise and verify correct operation. On 32-bit systems, 32-bit floating point data sets are used. On 64-bit systems, 64-bit floating point data sets are used. The random numbers are generated regularly to provide a larger data set, as well as ensure that the CPU caches overflow and that this mechanism is tested.

### Maximum Heat test

The maximum CPU Heat test is a vital tool to verify the reliability and stability of CPU and cooling systems with a maximized heat generation torture test. By default, we execute it during 1 minute but you can ask your Softthinks referent to increase its duration up to 15 minutes in order to detect missing or incorrectly fixed heatsinks for example.

### Monitoring

We monitor the CPU voltages, temperatures, power consummation, clock speeds, and usage during the whole diagnostic phase and display the minimum and maximum values on the right panel:

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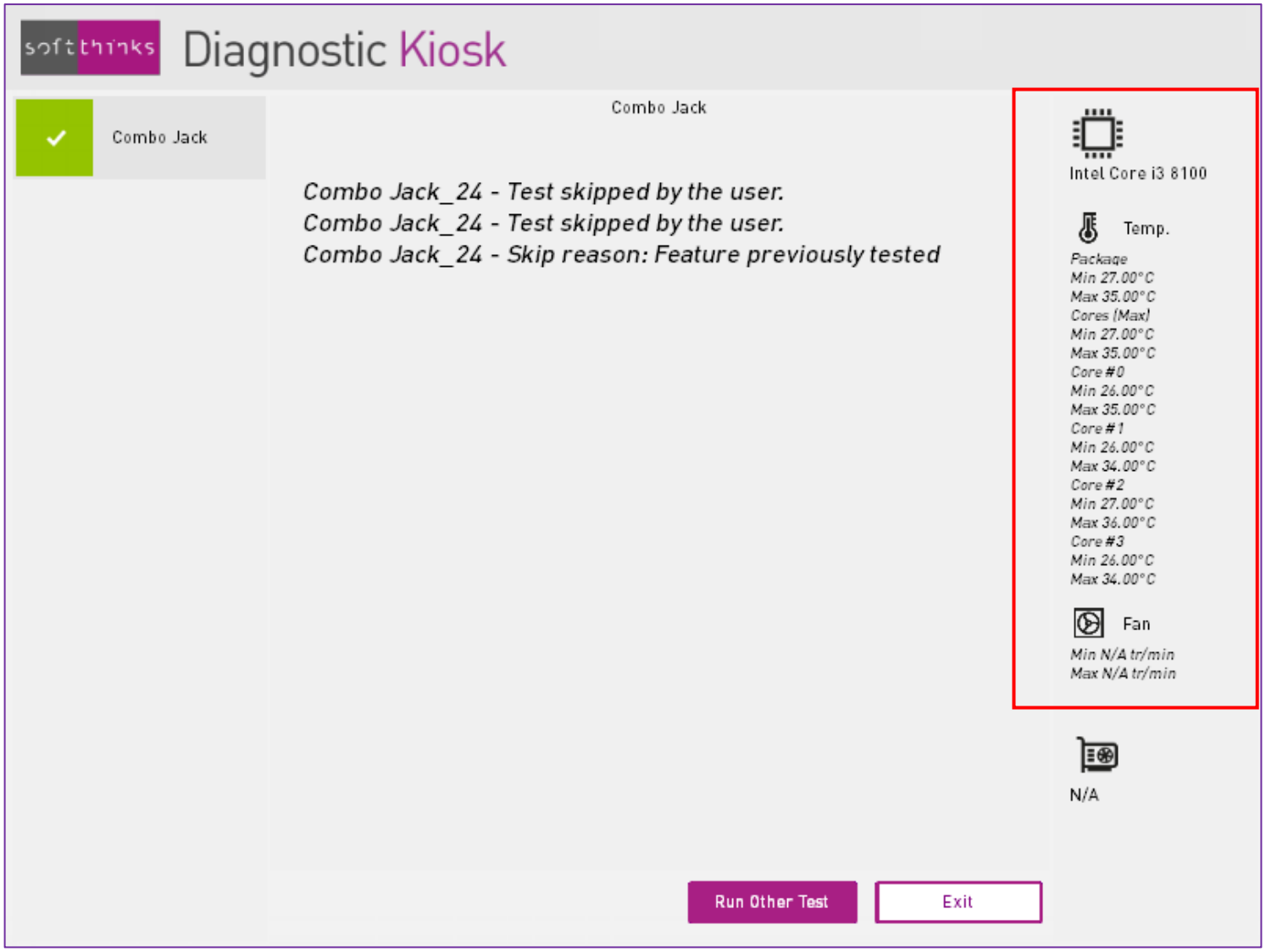


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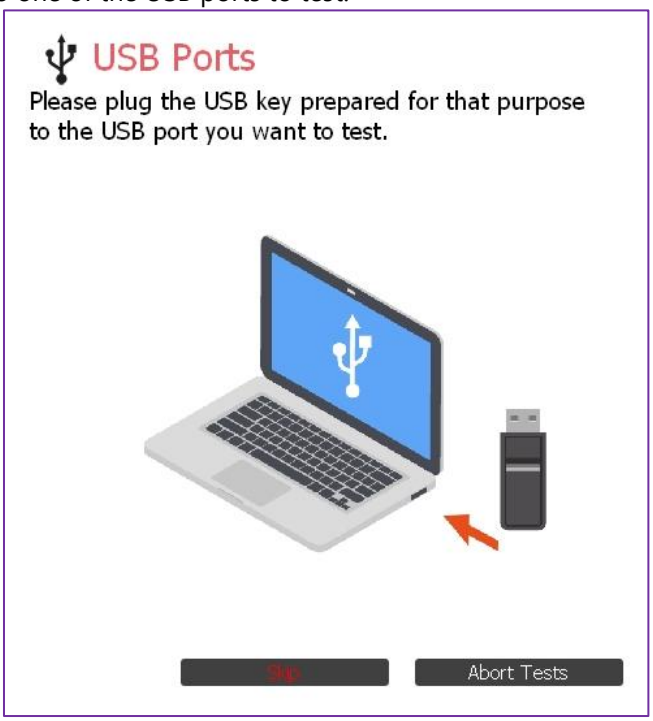
## Mainboard tests

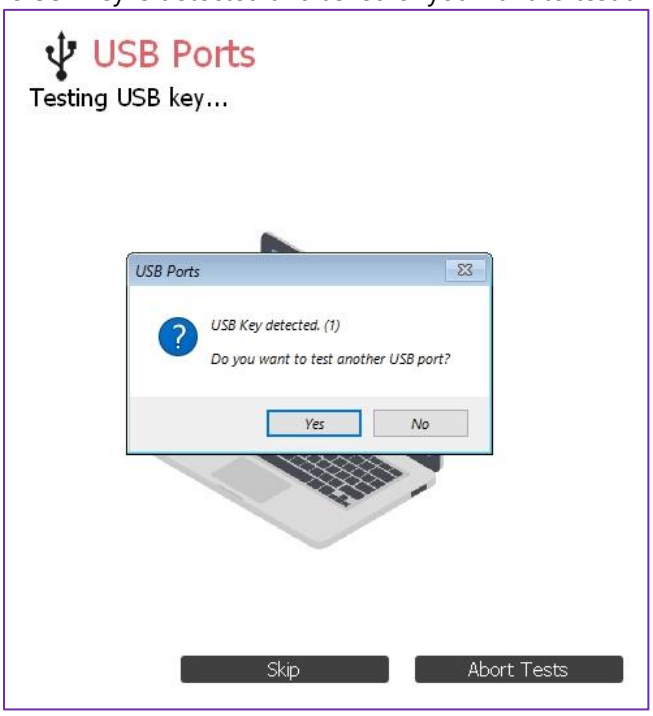
USB ports test

The USB ports test consist in detecting a USB key with a specific flag file which has to be plugged on each USB port.
Each USB port tested will appear as a unique test, meaning that if there are 4 USB ports and we didn't detect the USB key on one of them we will have 3 USB ports test succeeded and 1 USB port test failed.

1. Plug the test USB key to one of the USB ports to test:




2. You are notified once the USB key is detected and asked of you want to test another USB port:

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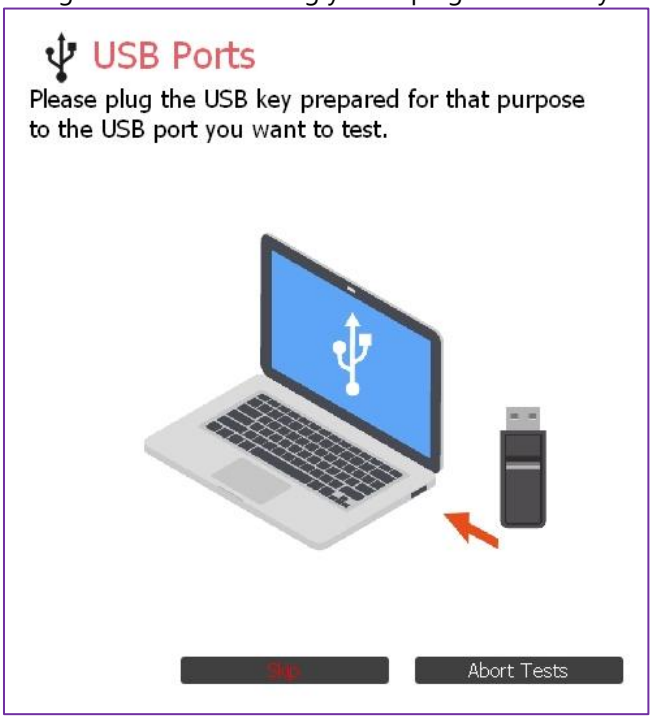
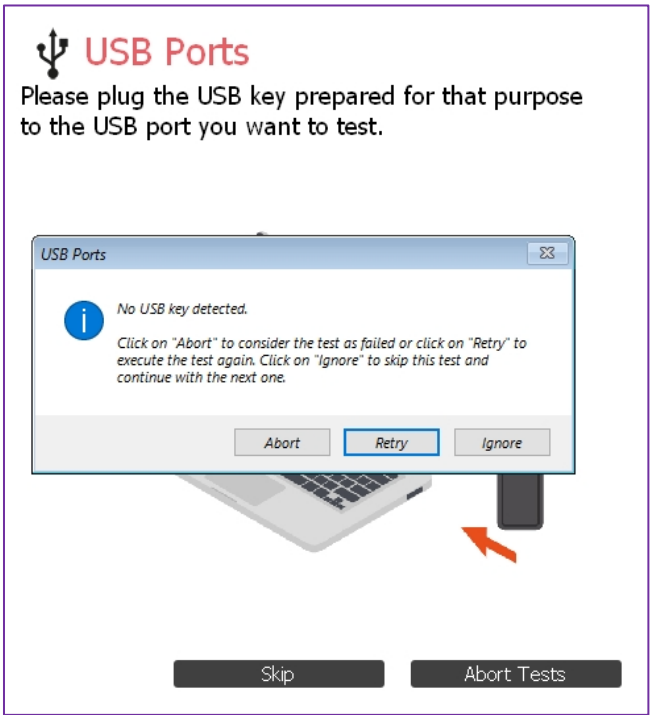
3. If you click on yes, you see again the screen asking you to plug the USB key to the USB port to test:




4. If the USB key is not detected after a predefined amount of time, you will be asked if you want to set this test as failed, retry or skip this test:

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Monitoring

We monitor the mainboard voltages, temperatures and fans' speed during the whole diagnostic phase and display the minimum and maximum values.

### Memory tests

The memory tests are all totally automatic, without UI, and not customizable.

### Graphic card tests

The graphic card tests are all totally automatic, not customizable, and will show BurnInTest UI.

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## Storage tests

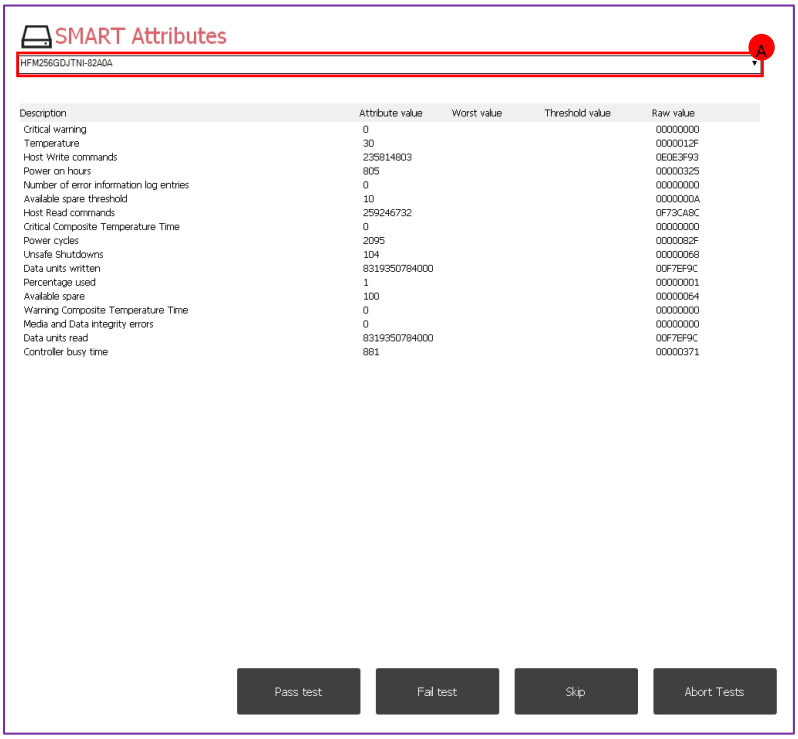
If the device contains several disks, you can specify if you want to test all of them, only the system disk, or all disks except the system disk.

### Disk Health status test

The Disk Health Status test is automatic and instantaneous since it will just query the Disk S.M.A.R.T. / Health status and pass the test as passed or failed depending on this value.

### Disk SMART Attributes test

The Disk SMART Attributes test displays the SMART attributes of all disks detected. Once you will have reviewed them for each disk (you can select the disk through the dropdown list on the top A ), you decide if the test is passed or failed, or eventually skip it:




You can record in the SQL DB the faulty SMART attributes by clicking on them (CTRL/SHIFT+ click for multi-selection) or selecting them though keyboard UP & DOWN keys (if you select several ones, they might be truncated in the SQL DB due to string length limitation).

### Disk Short SMART Test

Perform a short SMART test during some minutes.
Not compliant with Apple devices (you should use Random or Linear test for Apple devices).

### Disk Long SMART Test

Perform a long SMART test during 10 min to several hours, depending if you test a SSD or a mechanical HDD, and depending on the disk size.
Not compliant with Apple devices (you should use Random or Linear test for Apple devices).

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### Disk Random Read Test

Perform a random read test during some seconds for a SSD or several minutes for a mechanical HDD. You can specify the size of in MB of the sectors to read and the number or loops through the script.

### Disk Linear Read Test

Perform a linear read test during some seconds for a SSD or several minutes for a mechanical HDD. You can specify which sectors' range you want to test through the script.

### Optical drive read test

Check if we can read data from the optical media inserted (the media has to be readable, not RAW, neither damaged)

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## Network tests

### Wired network (LAN) test

This test is automatic and doesn't require any user intervention or customization.

### Wi-Fi (WLAN) test

This test is automatic, without any user intervention, but requires a dedicated Wi-Fi access point (802.11n minimum) which doesn't need to be connected to any network, neither internet. Since the access point is dedicated to this usage and not connected to any network you don't need any protection and configure it as open without authentication and encryption. The Wi-Fi test will check if it detects this access point and can connect to it.
So, in order to use the Wi-Fi test, you need first to enter the information required to connect to the access point in SDSTestNetwork.ini:
[Network]
SSID=<your access point SSID>
AUTH=<authentication method (open/WEP/WPA/WPA2PSK...)>
ENC=<encryption method (AES/TPIK...) >
KEY=<key>

You can also ask to test the 5GHz sub-network when supported by the Wi-Fi card by adding the section below:
[Network5G]
SSID=<Wi-Fi 5GHz SSID>
AUTH=<Wi-Fi 5GHz authentication method (WPA2PSK...)>
ENC=<Wi-Fi 5GHz encryption method (AES...) >
KEY=<Wi-Fi 5GHz key>

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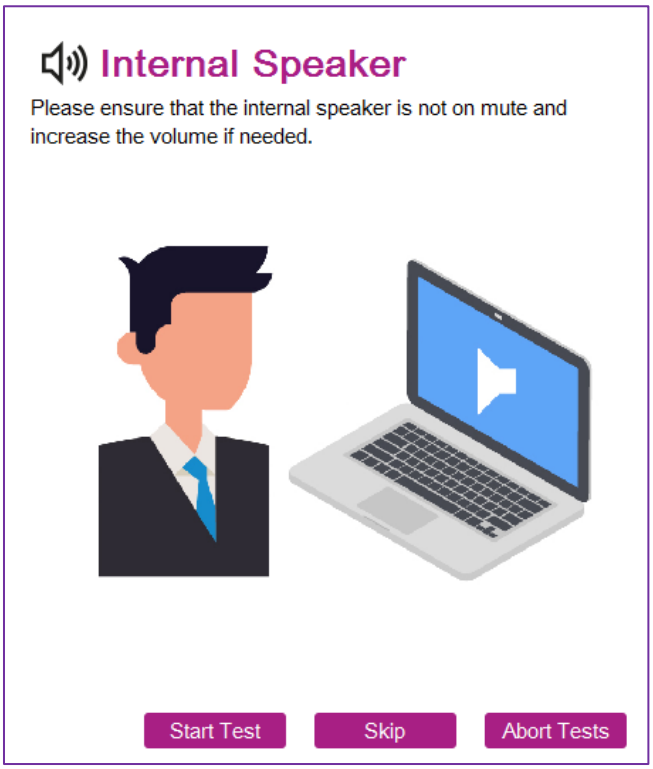
## Audio tests

For all audio tests, please ensure that the audio devices are not on mute.
When you are using an external microphone / speaker / headset, please ensure first that it is working correctly.
You can adjust, from 0 (%) to 100 (%), the playback volume and recording volume through VolumeLevel and MicLevel values in SDSTestAudio.ini. You can also reduce the recording duration though RecordingTime value which is set to 5 (s) by default.

### Internal speaker

The internal speaker test consists in playing a sound (you can use your own wave file, putting its path in “SoundFile” setting in the section [General] of SDSTestAudio.ini) and verify that you heard it.

1. Click on “Start Test” button

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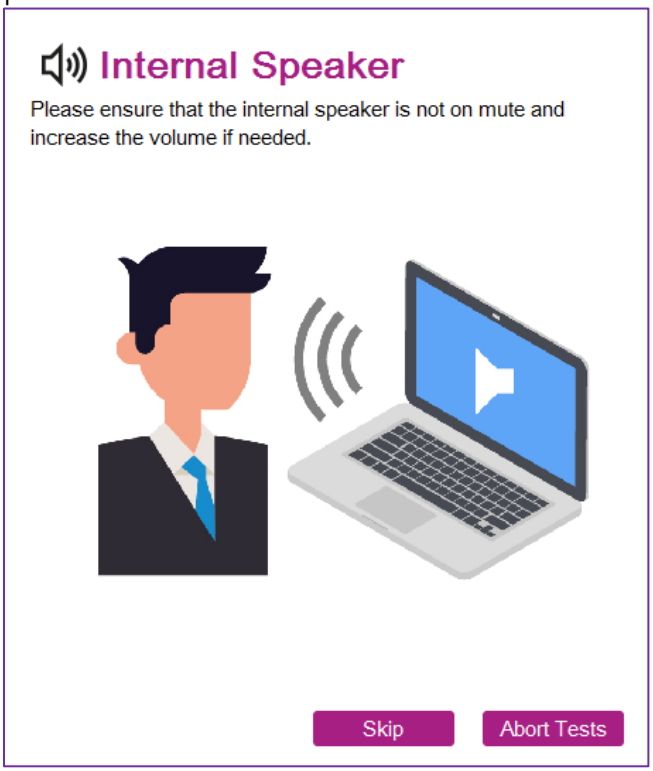
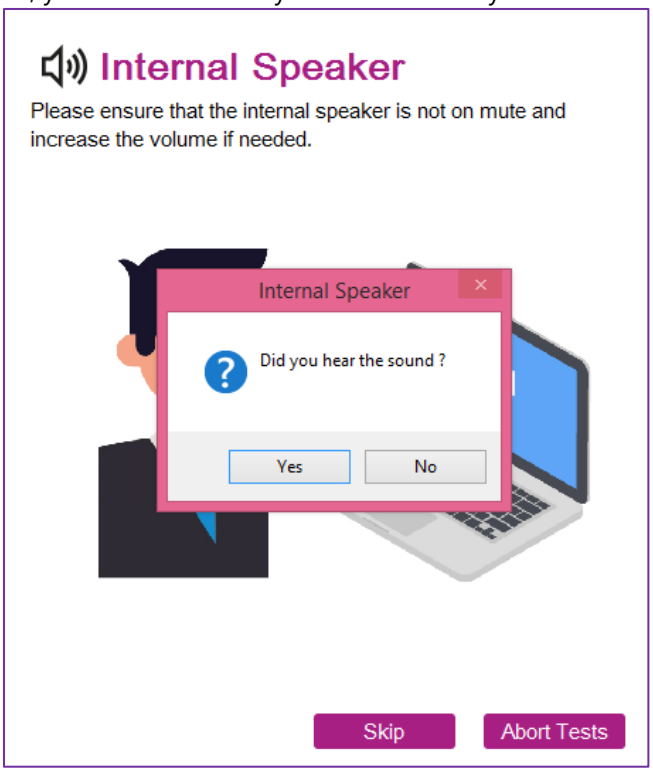
2. Listen to your internal speaker




3. You can press the ENTER key to validate the test as soon as you hear the sound

4. Once the wave file played, you will be asked if you heard correctly what has been played

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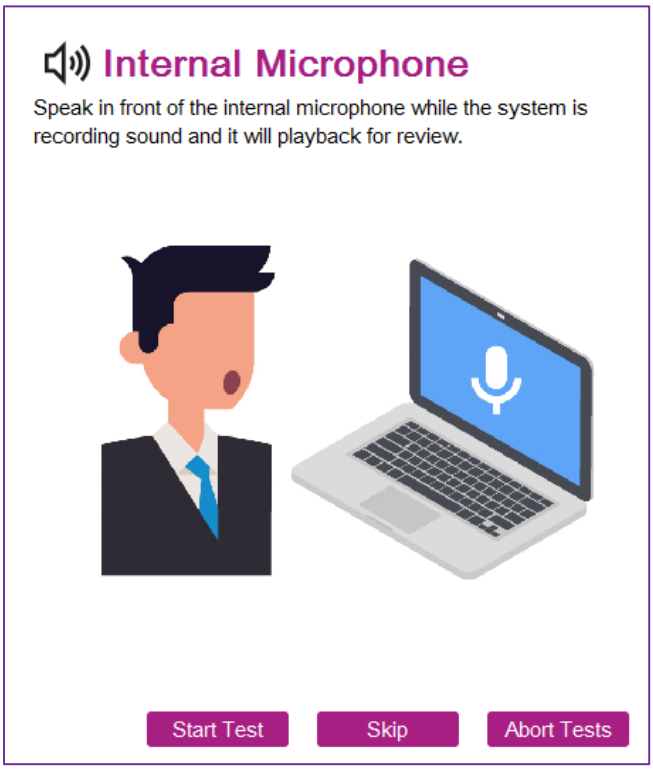
### Internal microphone

To test the internal microphone, you will be asked to speak to this microphone and then we will then play what has been recorded and ask you if you heard correctly what you said previously.

1. Click on “Start Test” button




2. Speak in front of the internal microphone

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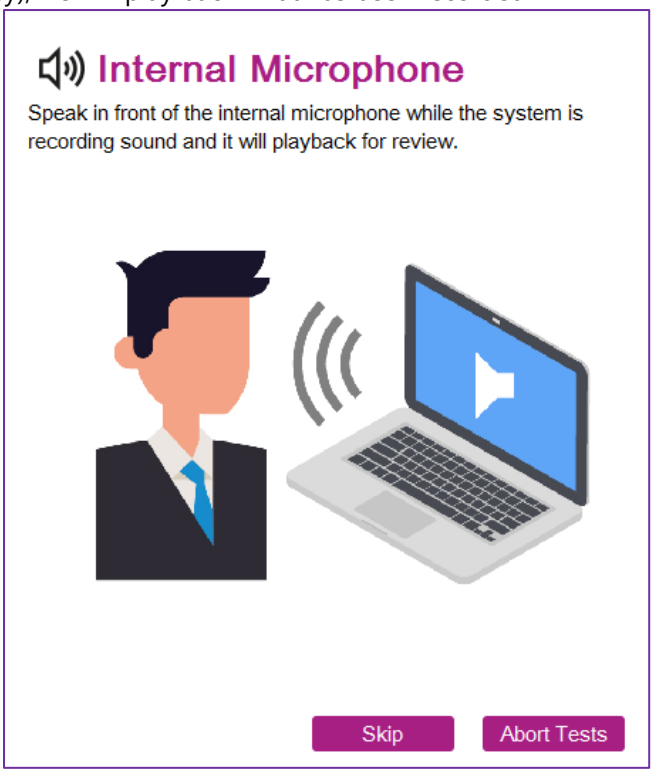
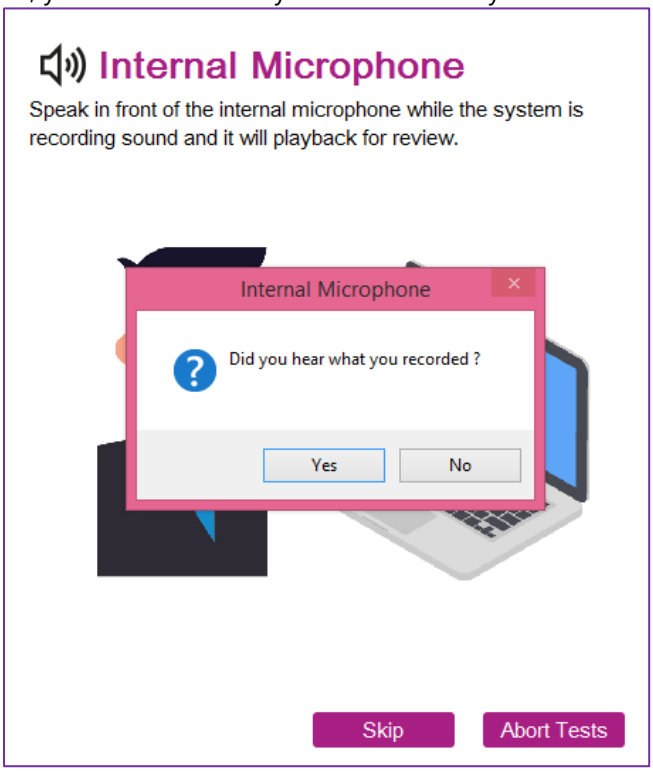
3. Once the recording phase complete (you can customize the recording duration, which is 5s by default, and stops it by pressing ENTER key), we will play back what has been recorded




4. You can press the ENTER key  to validate the test as soon as you hear the sound

5. Once the wave file played, you will be asked if you heard correctly what has been played

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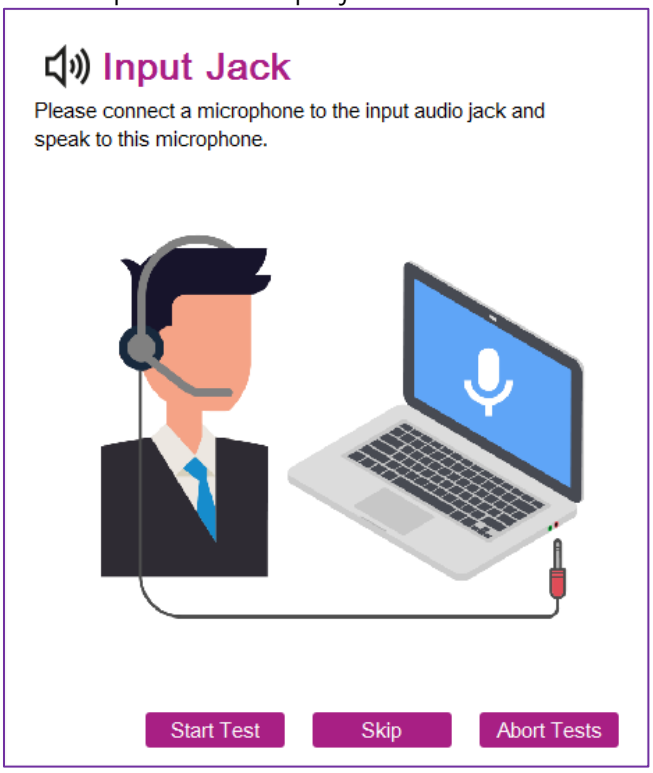
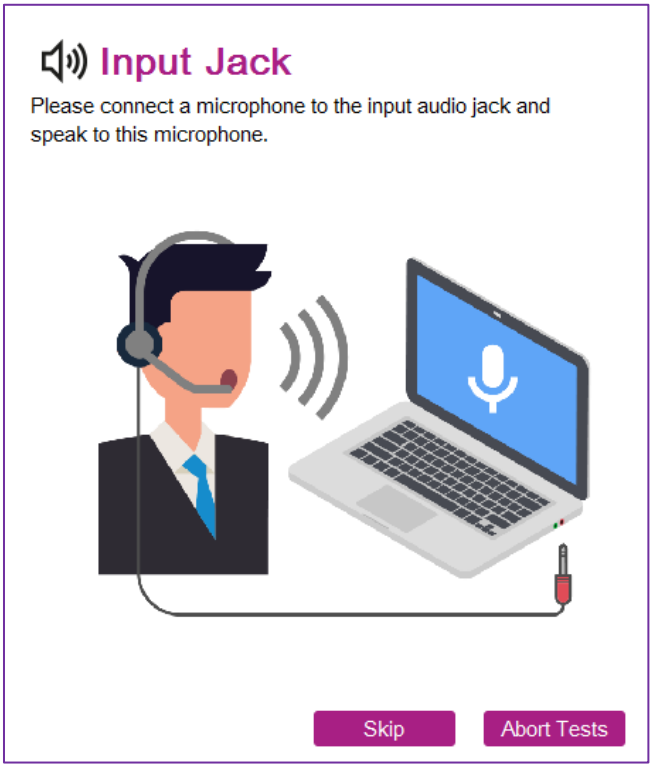
### Input jack test

To test the input jack, you will be asked to plug an external microphone into this jack and speak to this microphone. We will then play what has been recorded and ask you if you heard correctly what you said previously.

1. Plug a fully tested external microphone to the input jack and click on “Start Test” button




2. Speak to the microphone

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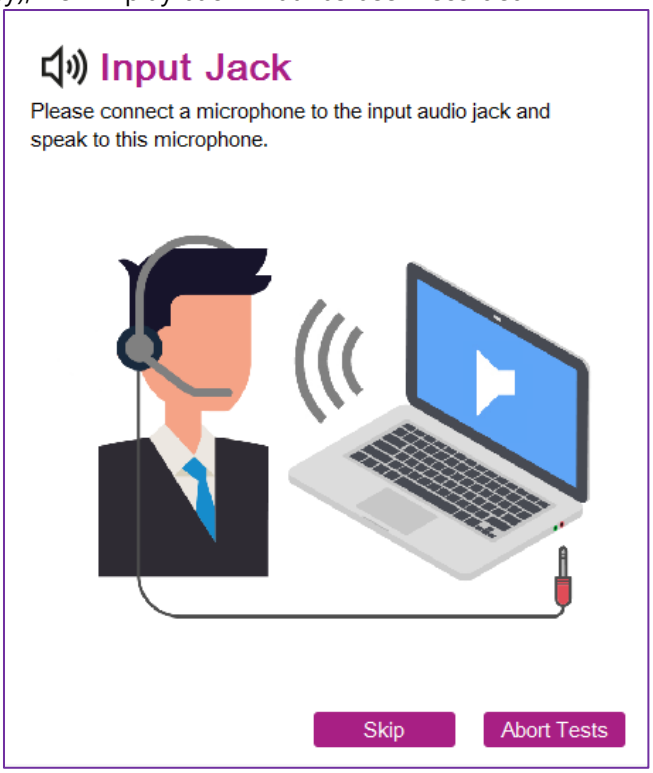
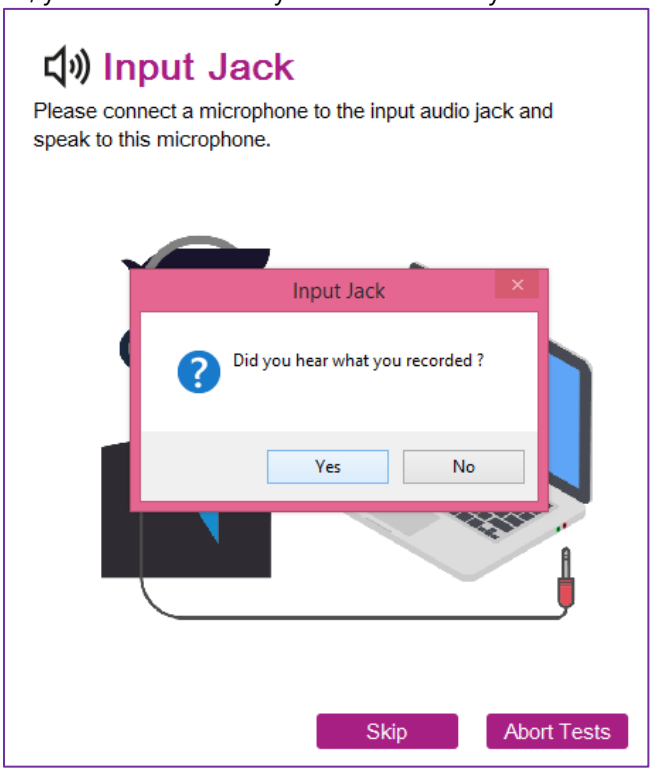
3. Once the recording phase complete (you can customize the recording duration, which is 5s by default, and stops it by pressing ENTER key), we will play back what has been recorded




4. You can press the ENTER key to validate the test as soon as you hear the sound

5. Once the wave file played, you will be asked if you heard correctly what has been played

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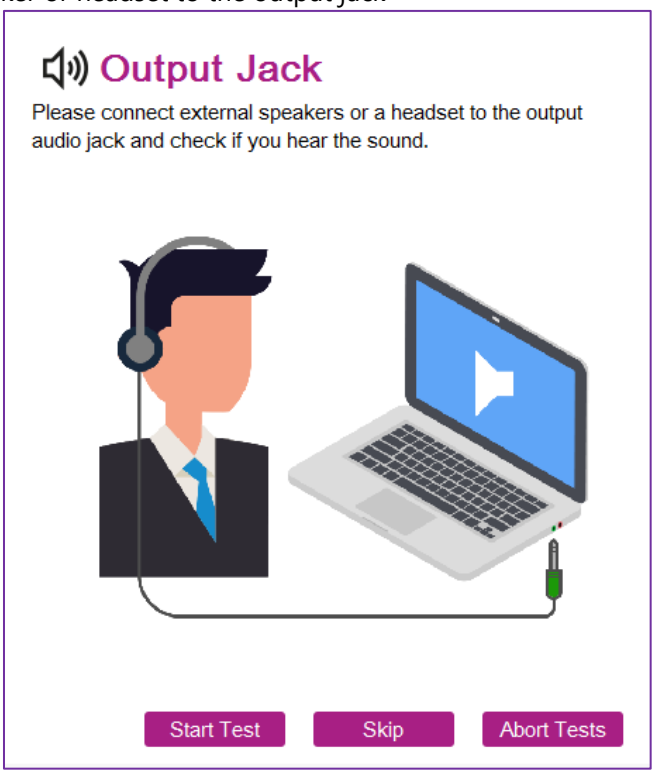
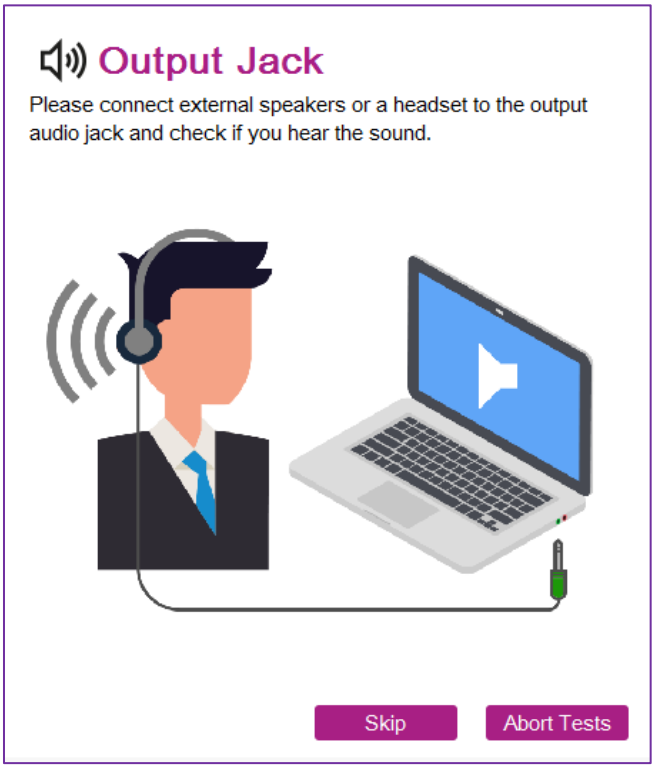
### Output jack test

The output jack test consists in playing a sound to a speaker plugged to the output jack.

1. Plug a fully tested speaker or headset to the output jack




2. Listen to your speaker / headset

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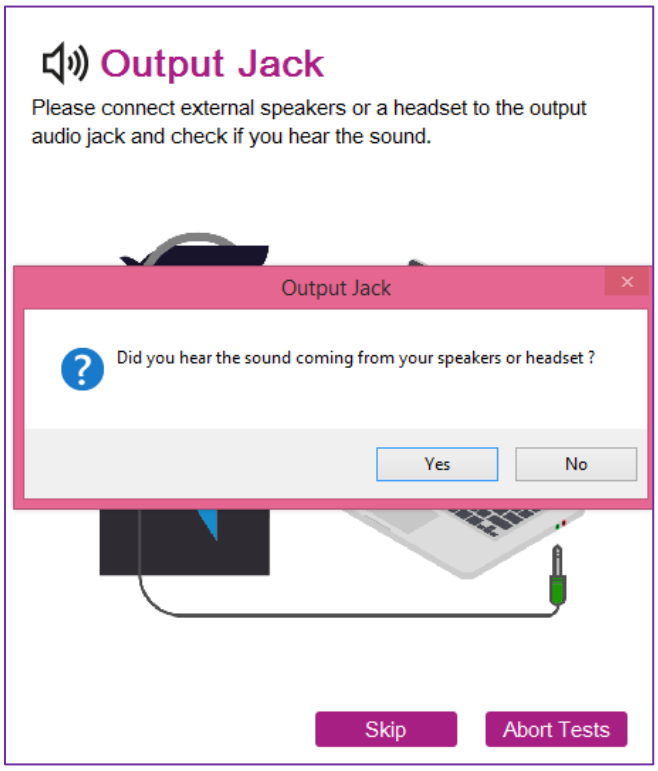
3. Indicate if you heard the sound

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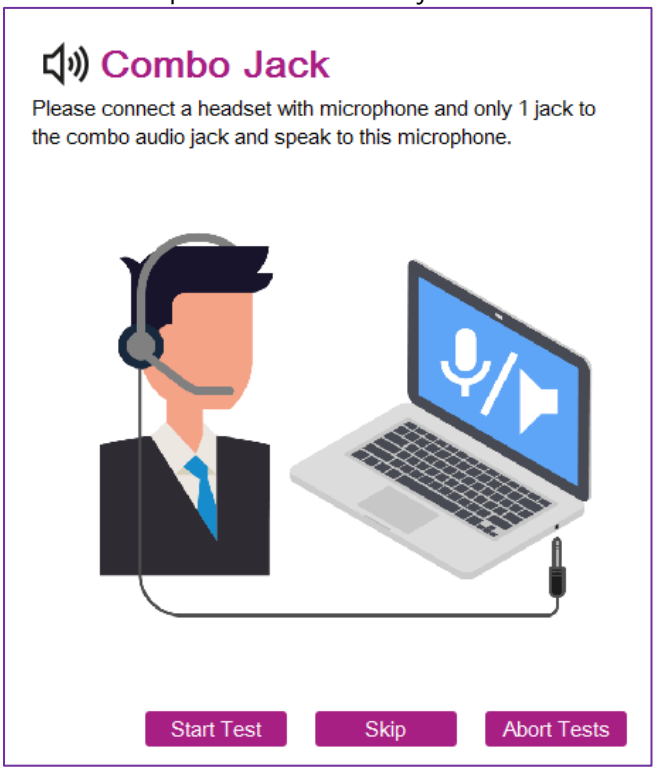
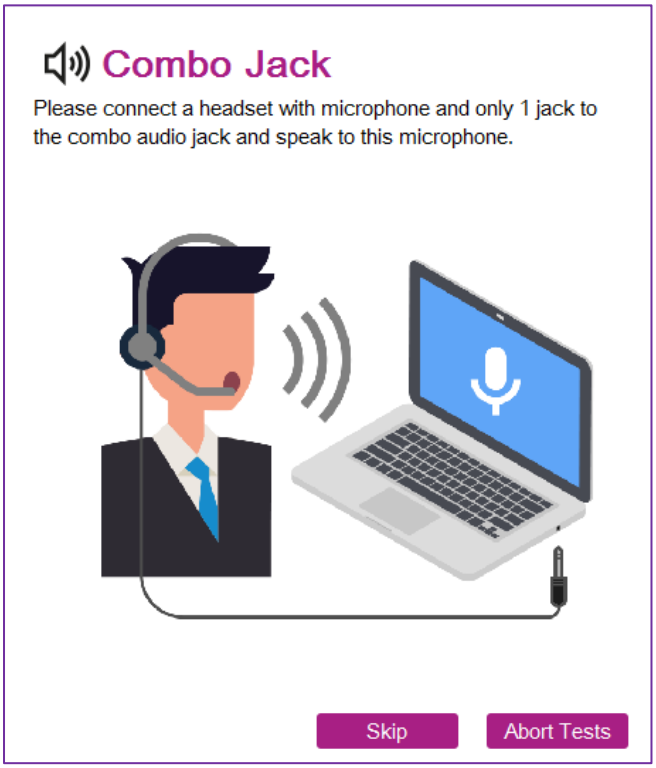
### Combo jack test

The combo jack test ensure that the combo jack allows both input and output transfers by recording a sound and playing it.

1. Plug a fully tested headset with microphone to the combo jack and click on “Start Test” button




2. Speak to the microphone

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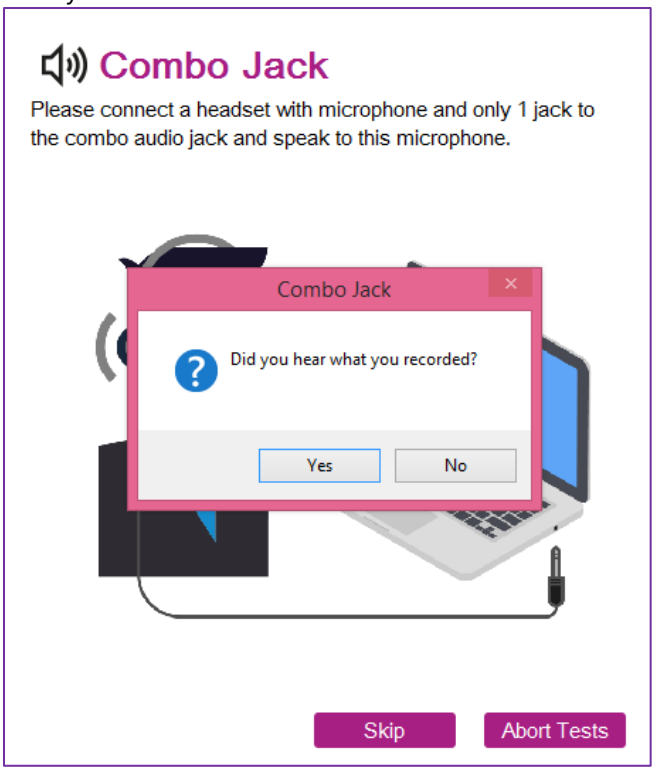
3. Listen to what we recorded

4. Confirm if you heard correctly what was recorded

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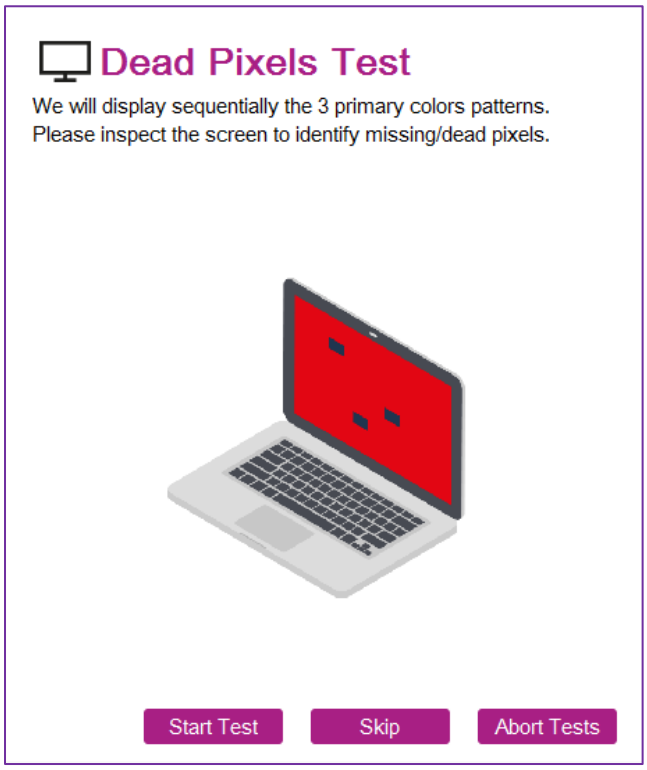
## Screen tests

### Dead pixel test

The dead pixel test displays sequentially color patterns in full screen to detect dead pixels. The operator can switch the color patterns manually by pressing ENTER/ESC and you can also switch the color pattern automatically after a customizable delay ("DelayBetweenColors" value in seconds in SDSTestMire.ini)
By default, the 3 primary colors (Red, Green, Blue) are displayed, and you can add up to 2 custom colors through "CustomColor" and "CustomColor2" values (CustomColor[2]=R,V,B) in SDSTestMire.ini: CustomColor=0,0,0 will display a 4th black color pattern and CustomColor2=255,255,255 will display a 5th white color pattern.

1. Click on "Start Test" button




2. Search for any pixel of a different color than the first primary color (red) pattern displayed
3. Press ENTER/ESC key to switch to next color pattern, or wait for the delay eventually specified
4. Search for any pixel of a different color than the second primary color (green) pattern displayed
5. Press ENTER/ESC key to switch to next color pattern, or wait for the delay eventually specified
6. Search for any pixel of a different color than the third primary color (blue) pattern displayed
7. Press ENTER/ESC key, or wait for the delay eventually specified
8. If a custom color has been specified, search for any pixel of a different color than this custom color pattern and then press ENTER/ESC key, or wait for the delay eventually specified
9. If another custom color has been specified, search for any pixel of a different color than this another custom color pattern and then press ENTER/ESC key, or wait for the delay eventually specified

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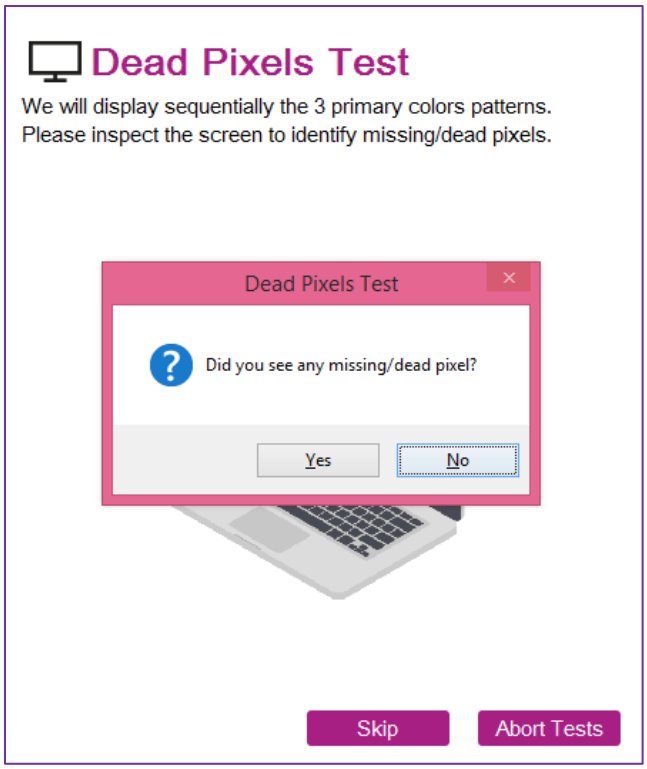
10. Once all color patterns will have been displayed can respond to the question asking you if you noticed any dead pixel

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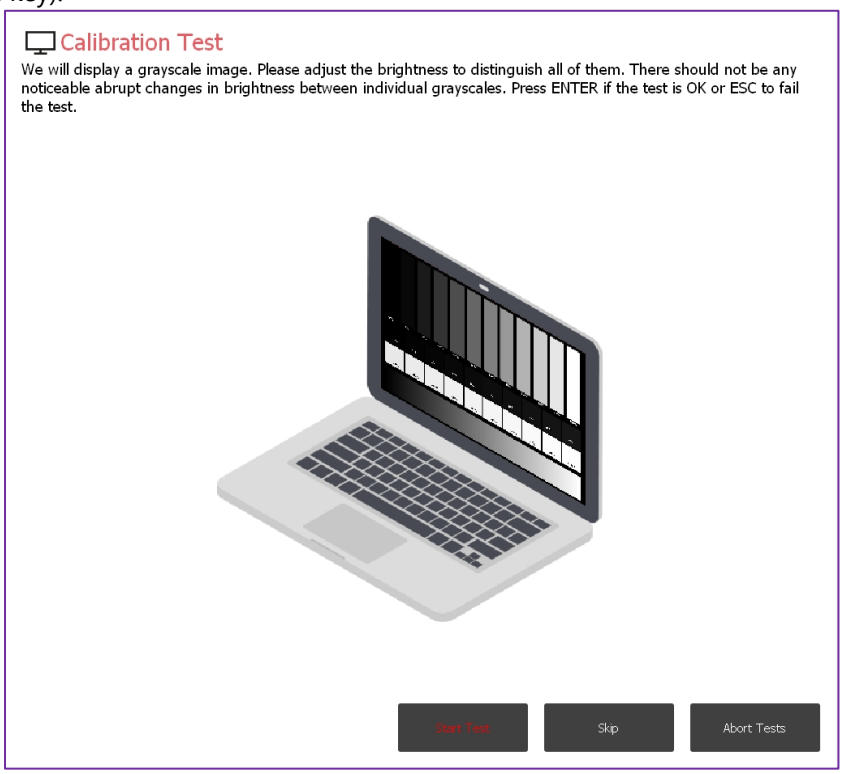
### Calibration test

The calibration test will display on the screen a grayscale image.
You will need to adjust the brightness and contrast until you distinguish all grey levels without any noticeable abrupt changes in brightness between individual grayscales. If you get this result press ENTER key to pass the test. Else press the ESC key.
Instead of using the keyboard keys, you can respond to the question which will be asked after a customizable amount of time ("Timeout" value in SDSTestMire.ini before asking the user if he considers the test as passed or failed, or set it to 0 to wait until he presses ENTER/ESC key).

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### Touchscreen test

For screens which are touch capable, you can test this capability with this dedicated test. Else, you can skip this test and select “Feature not present” reason if asked for.

1. Click with your finger on 1 “click here!” button

2. Click with your finger on another “click here!” button
3. Click with your finger on remaining “click here!” button

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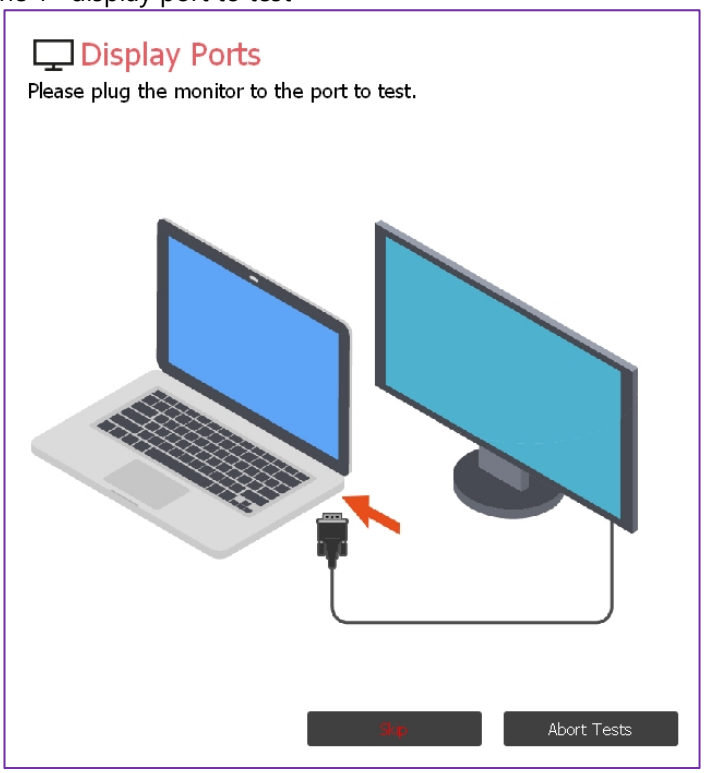
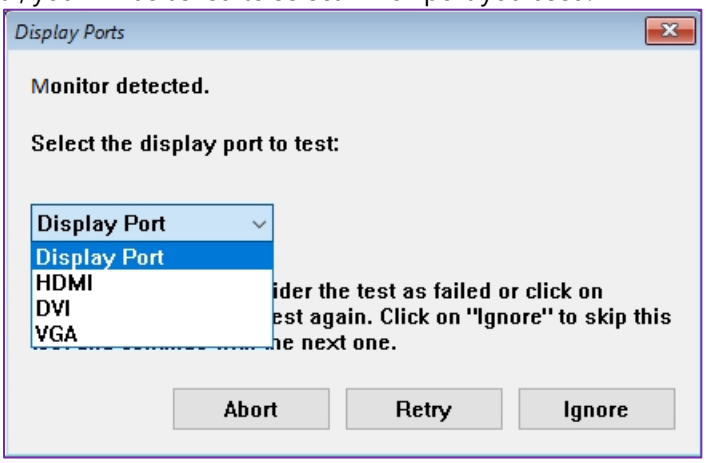
### Display ports test

In order to test the display ports, you will be asked to connect an external monitor (with ideally HDMI + DVI + Display Port + VGA ports or else you would need several monitors), which you will have already fully tested with all the connections and plugged to AC power, to each display port to verify if you get the result expected on the monitor. Each display port tested will be recorded unitary on the SQL database.
For this test you need a boot image including the dedicated graphic card drivers and monitor service.

1. Plug the monitor to the 1st display port to test




2. If the port is functional, you will be asked to select which port you used:




Else, after a timeout, you will be notified that we didn't detect the monitor. You will be asked also to select the port you used and will have the possibility to check the connection and retry or set the test as failed.

3. Plug the monitor on the next port to test and so on…

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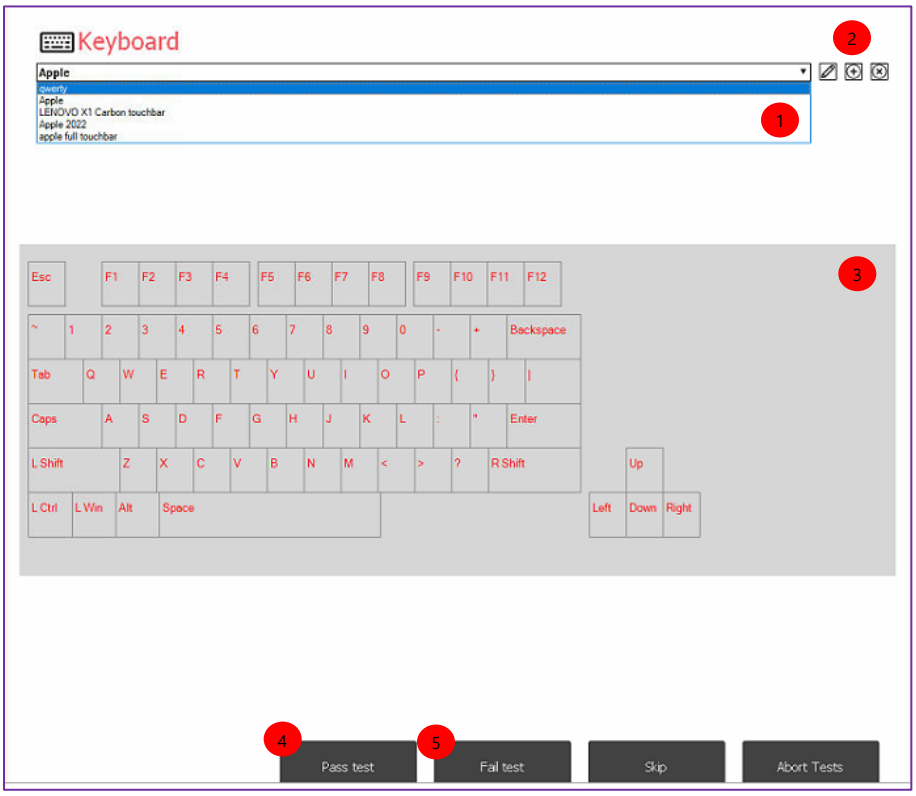
## User inputs tests

### Keyboard test

The keyboard tests ensure that all the keyboard keys are functional, meaning that we detect when they are pressed and then released.

To test a keyboard, you need first to select a keyboard layout within the list (1).
You have the ability to edit a layout, add a new one or delete one.




You have to press and release all the keys and the test automatically ends as successful once all the keys have been pressed and released (3). The key is colored in red when pressed and then in green when released.

You have anyway the possibility to force a success by clicking on “Pass test” button (4) (for example if the keyboard has less keys than expected in the selected layout).

In the same way you can directly set the test as failed by clicking on “Fail test” button (5).

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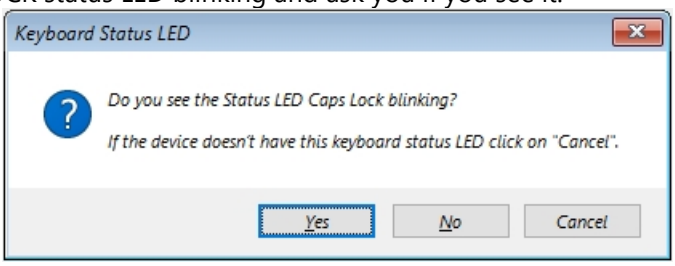
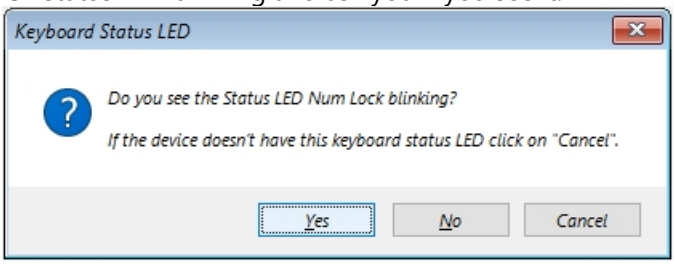
### Keyboard LED status test

This test allows you to verify that all keyboard status LED are working.

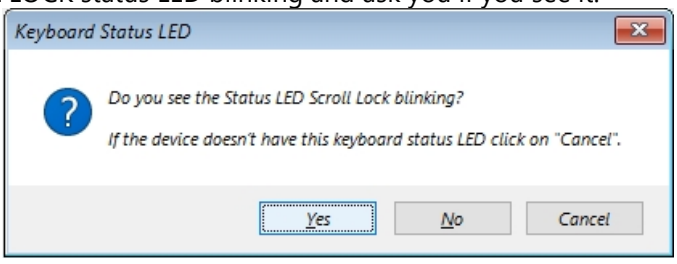
1. We make the CAPS LOCK status LED blinking and ask you if you see it:




2. We make the NUM LOCK status LED blinking and ask you if you see it:




3. We make the SCROOL LOCK status LED blinking and ask you if you see it:

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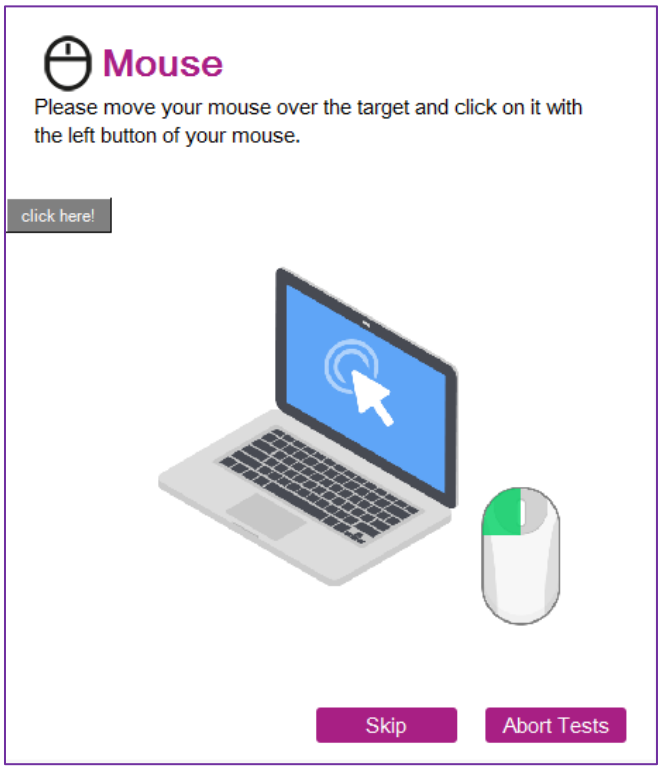
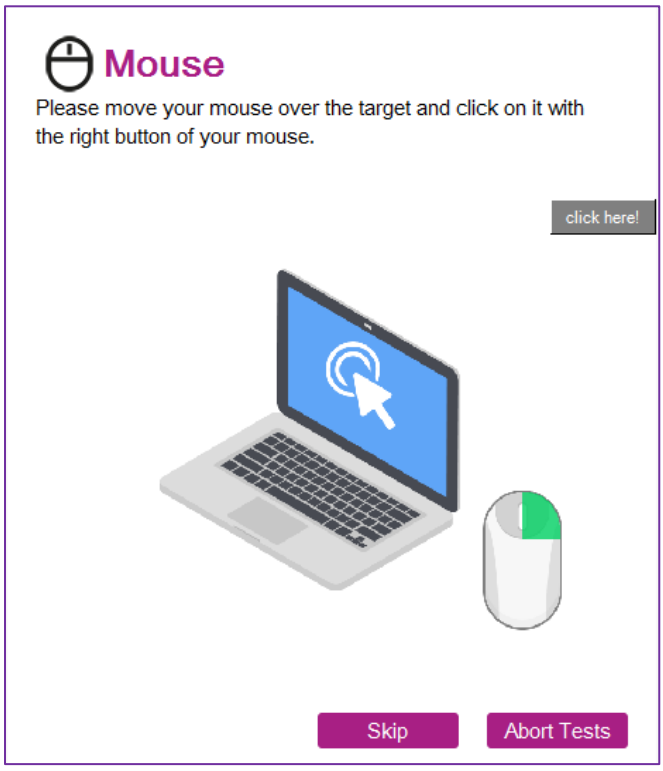
## Mouse test

The mouse test will verify that the movements and all buttons are working correctly (you have a dedicated test for trackpad).

1. Please connect the mouse to test to the device and use it to move the cursor to the "click here!" button and then click with the mouse left button:




2. Then, move the cursor with the mouse to the new “click here!” button displayed and this time click with the mouse right button:

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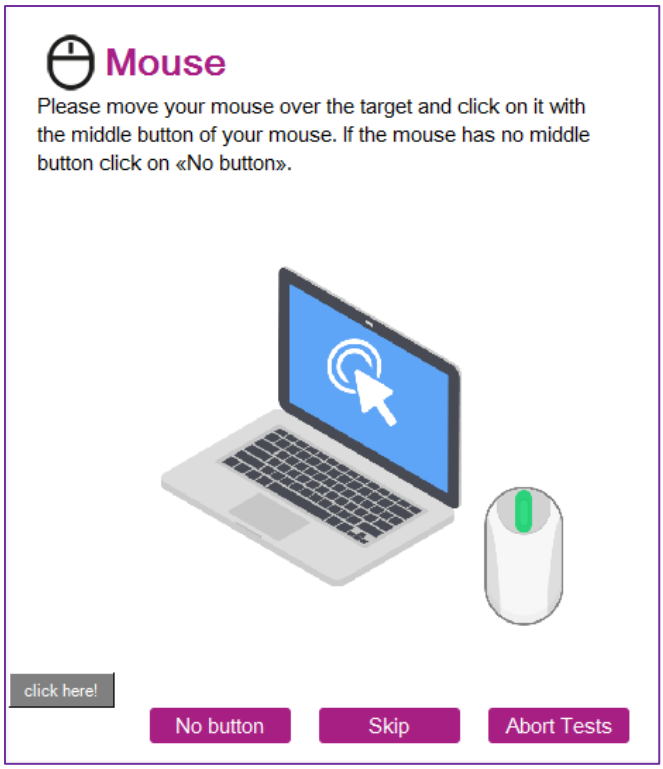
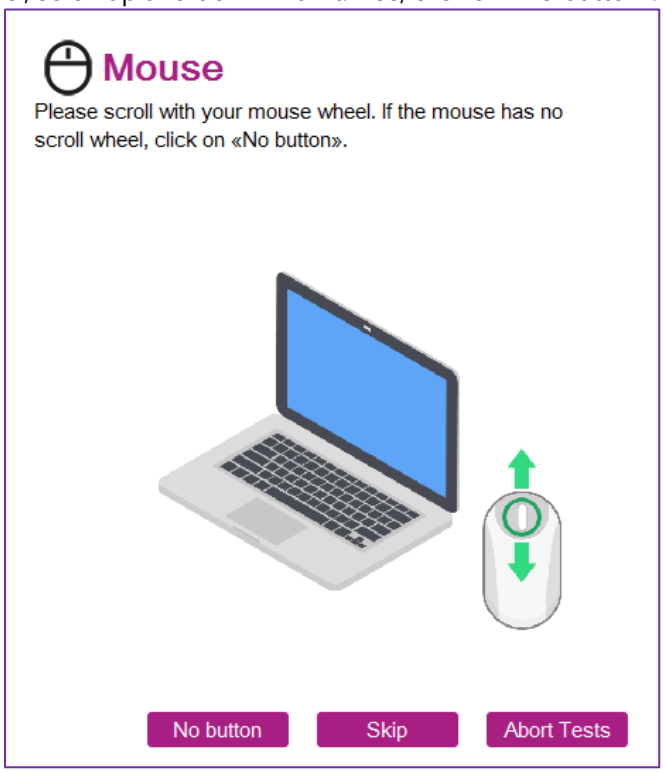
3. If the mouse has a 3rd middle button, click on the new “click here!” button displayed with this 3rd button. Else, click on “No button”:




4. If the mouse has a wheel, scroll up and down with it. Else, click on “No button”:




5. The mouse test is now complete

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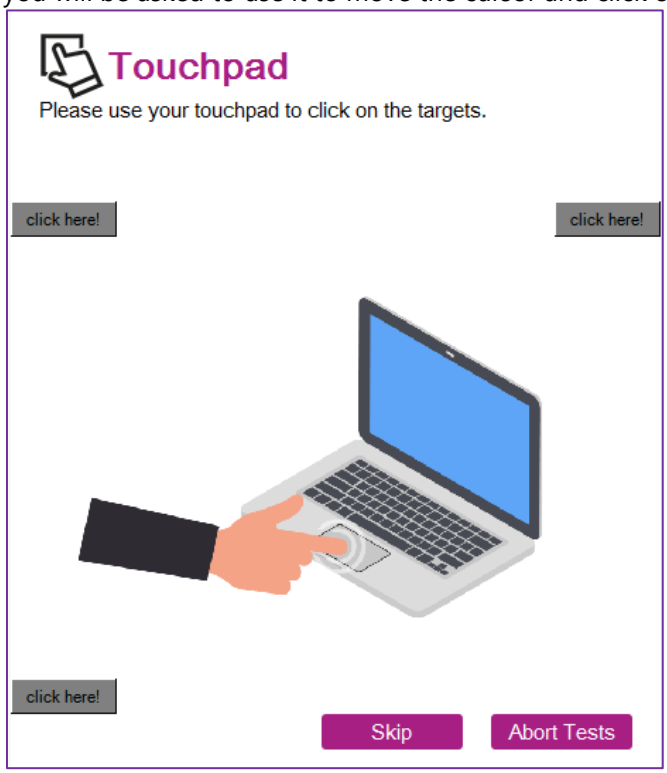
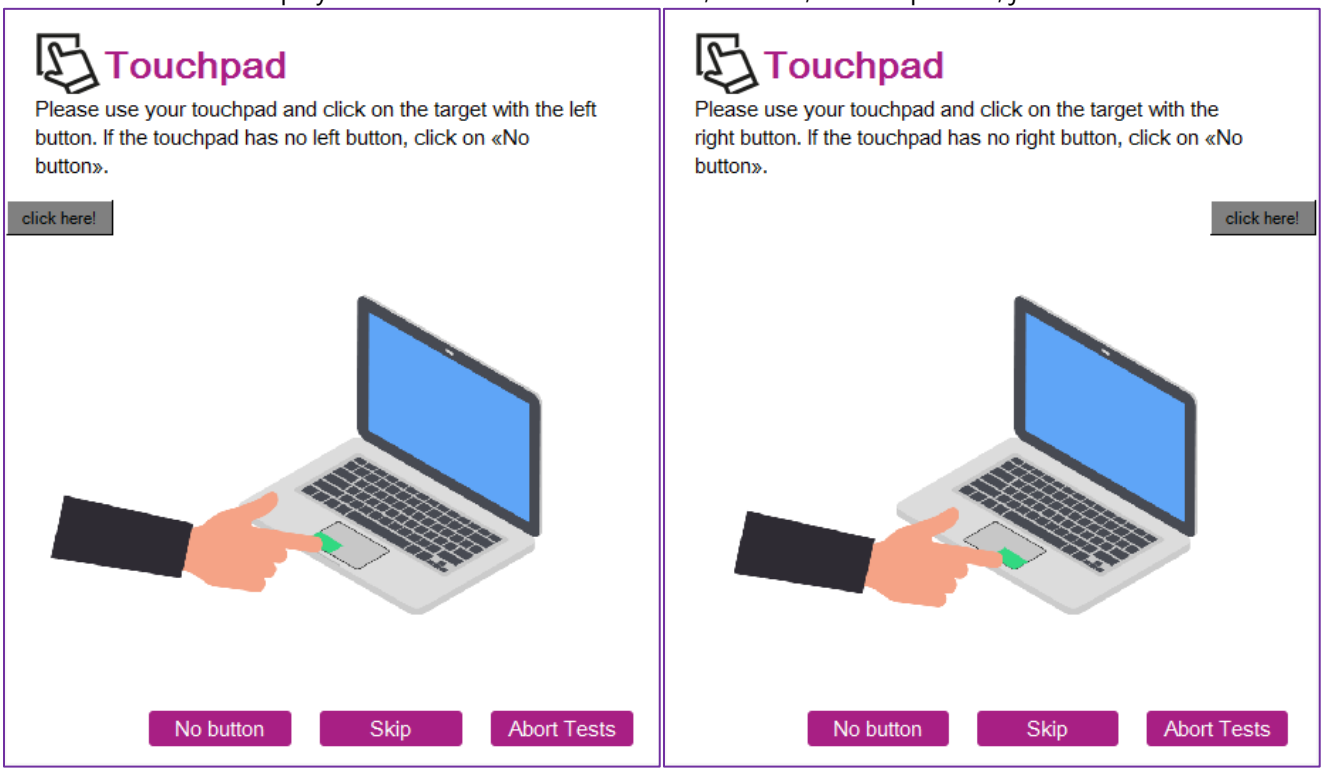
### Touchpad test

In order to fully test the touchpad, you will be asked to use it to move the cursor and click on 3 buttons on the screen:




Then, if the touchpad has dedicated physical buttons for left-click and right-click, you will need to use those buttons to click on the "click here!" buttons displayed on the screen. If one of them, or both, are not present, just click on "No button":

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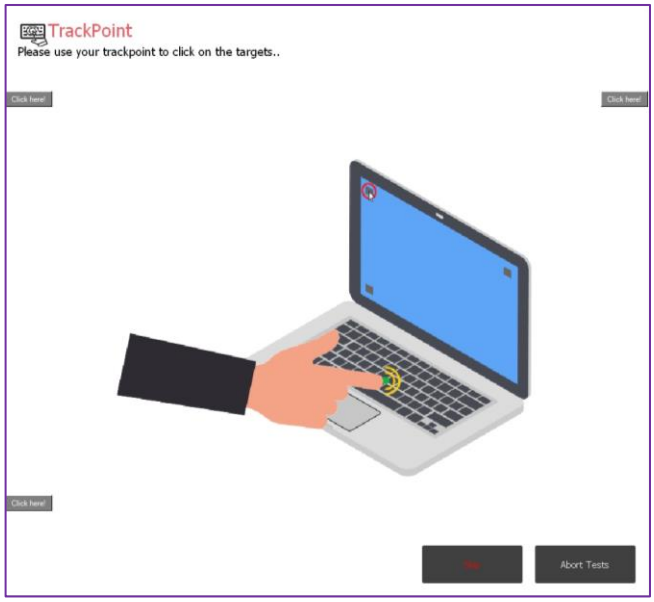
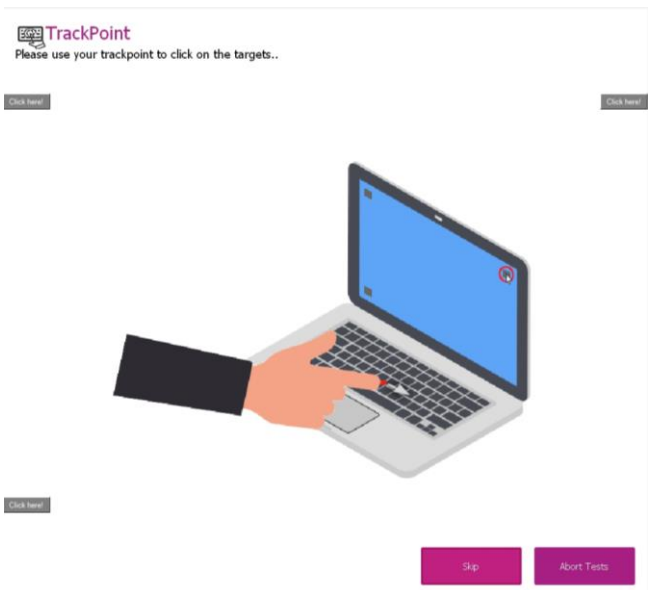
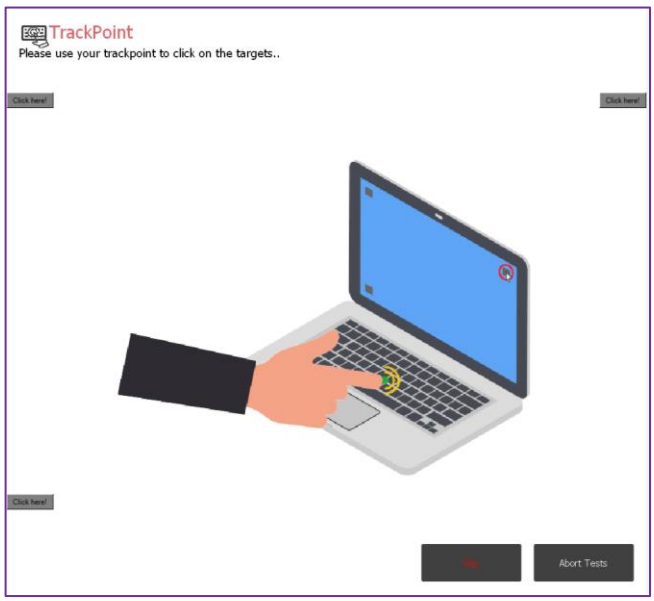
## Trackpoint test

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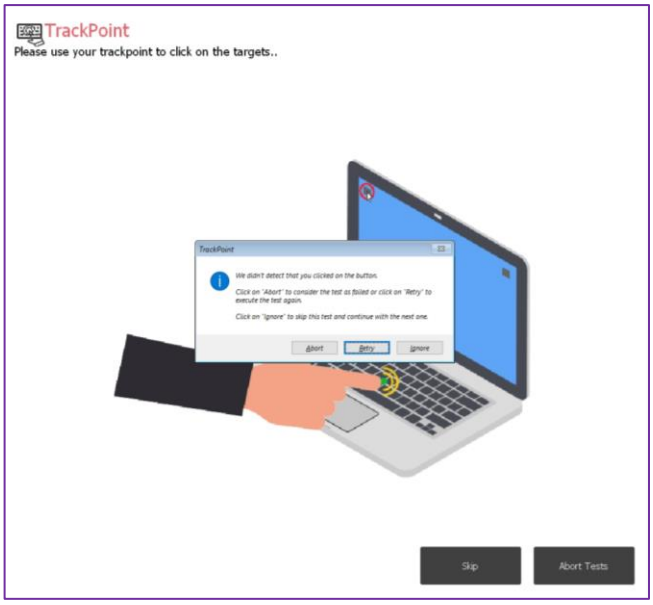


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## Battery tests

### Battery health test

The health test is fully automatic and instantaneous. It will compute the heath level based on the current maximum capacity and the designed one:
health level = (current max capacity / designed max capacity) x 100 = 100 - wear level
wear level= [(designed max capacity - current max capacity)/designed max capacity] x 100 = 100 - health level

If the health value is above the “ErrorLevel” value you can customize in SDSTestBattery.ini, the test will pass, else if will fail.

### Battery charging test

The battery charging test will ensure that the battery is charging when it’s plugged to AC power.

NOTE: Some devices include a mechanism to preserve the battery life: above a specific value the battery is no more charging. So, in order to run this test properly, please ensure that the current charge is below this threshold (this value might depend on manufacturers and might be customizable, so we recommend making this test with a current charge below 60%).

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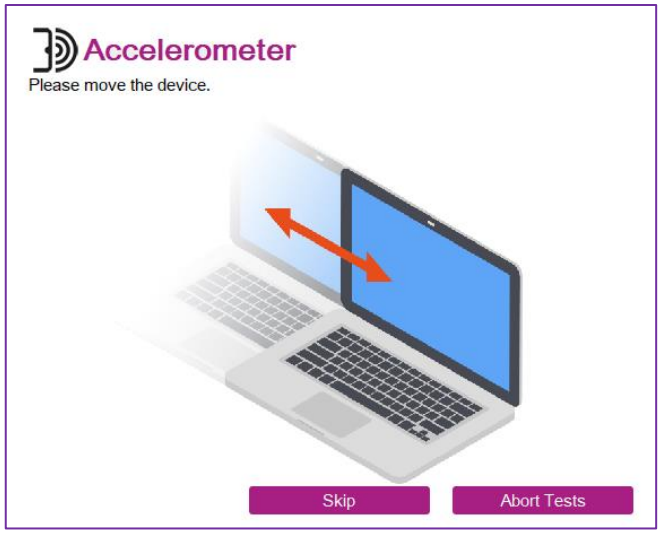
## Sensor tests

### Accelerometer test

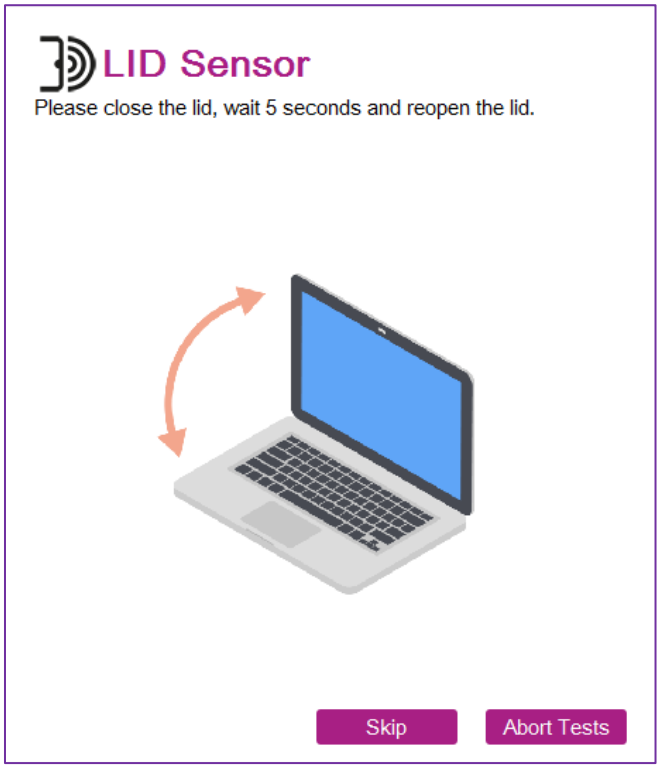
This test will ensure that the accelerometer detects when you move the device.




### LID sensor test

The LID Sensor test verifies that the device detects correctly when you close the lid.

1. Close the lid and wait for 5 seconds




2. Reopen the IDL

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### Other tests

Webcam

To verify that the webcam is working correctly, the test will display in real-time what is captured by the webcam.

Then you will be asked if the image you were filming display properly.

If the device has several webcams / cameras (as MS Surface), all of them will be tested.

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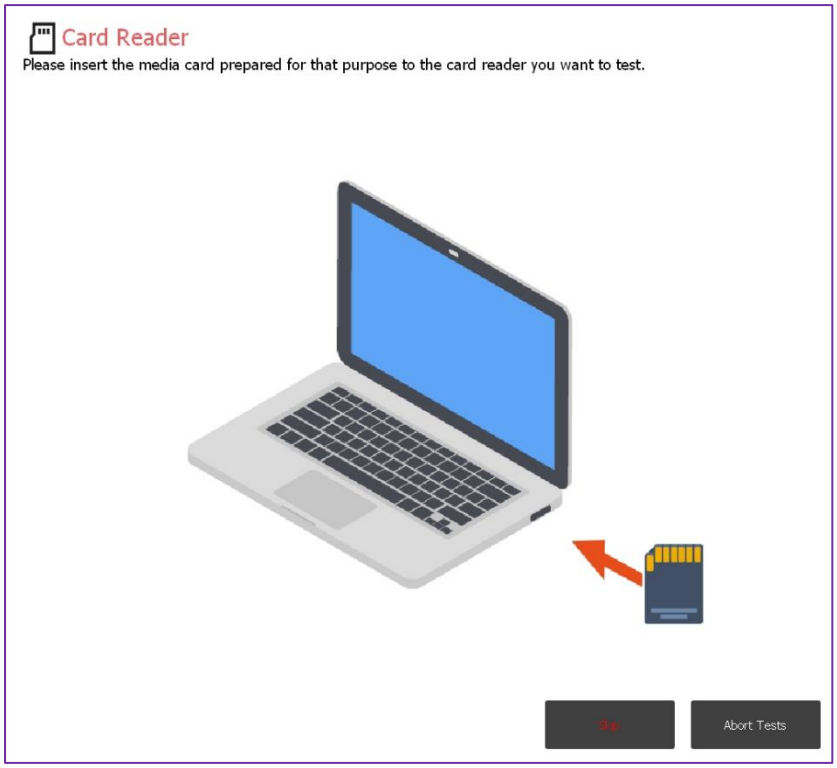
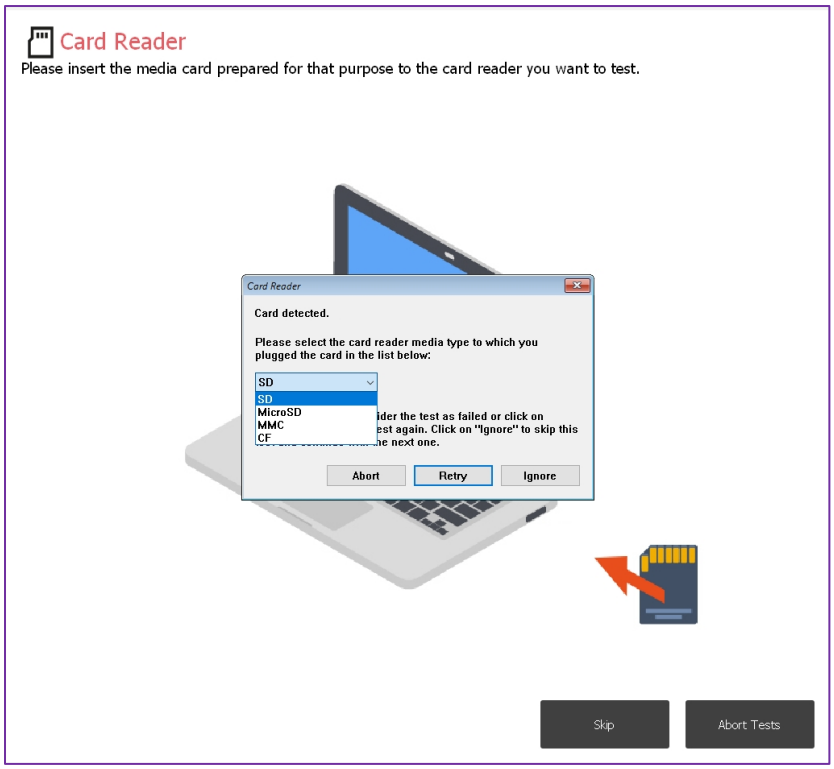
## Card reader test

1. Insert a card media into the card reader




2. If the car reader is working fine, the card will be detected, and you will be asked to select the slot into which you inserted the card:




3. If no card is detected after a predefined delay, you will be asked also to indicate which slot you used

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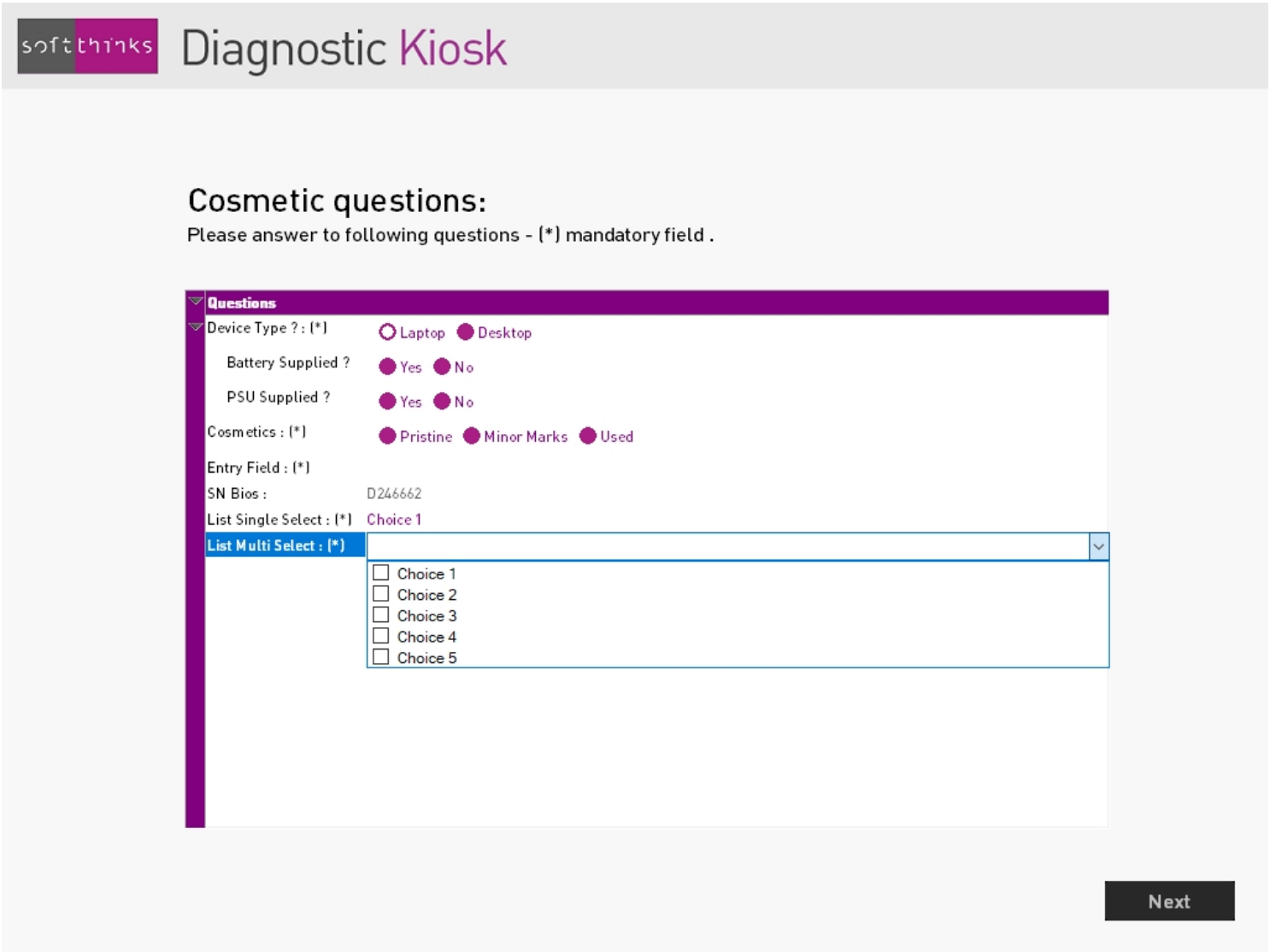
# Auditing hardware

This is a dynamic setup where there would be series of questions presented to the user with potential additional questions that would be presented based on an answer to one of the first questions.

Ex: First question would ask "Any Cosmetic Damage", if the answer is yes then additional question would be displayed to ask about the damage. If no, then the additional question would not be displayed. The questions to display would be controlled by the config file.

Prior to use this module, you will have to define the questions and expected results (text field, yes/no radio button…). You can also define dependencies between questions (for example display a question or not depending on the answer to another question). You can even use custom text color for the answer depending on the value of this answer (typically green for "passed" result, orange for "warning" result, red for "error" result). Please refer to How to setup the auditing module.

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The questions and responses are saved in the Database when you click on Next (and go to next step), or press CTRL+S (without exiting the current screen), and can be used in reports, labels and also to generate a grade / trade-in code based on the rules you will define.
They can also be linked to some hardware tests to discard some which would not be relevant (for example if it's a desktop PC without keyboard supplied, we should not test the keyboard that the operator will plug to the PC).

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# Reporting

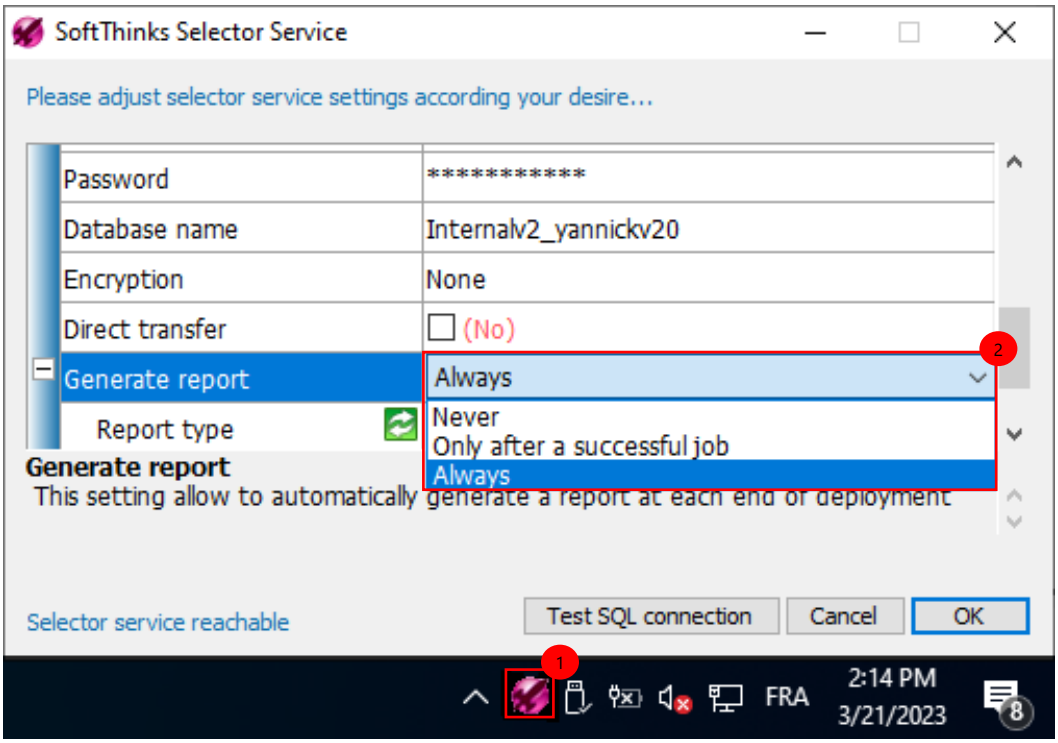
You have the ability to generate reports/exports systematically, or only on success, at the end of any process, as well as during the process itself (typically to be displayed by SDSReport) with the data already pushed to the SQL database at this moment, or at any time later through ReportGenerator tool or through the Dashboard.

The reports/exports are based on a text based (XML/CSV/HTML...) templates files and can also be generated to PDF file format.
Those templates are using a specific syntax allowing to access dynamically any data stored in SDS SQL Database, providing statement controls as conditions and loops, and formatting options. They are also localized.

Typically, XML/CSV reports can be used for data processing / ERP integration purpose, and the PDF/HTML are more dedicated to be provided to end users. You can also automatically print them, send them by email and push them to FTP.

In order to generate reports, please first check that this feature is enabled:

1. Double-click on the SoftThinks Selector Service icon (1) in the system tray of the Windows taskbar, or click on it and select "Selector Settings" item in the pop-up menu displayed:




   If the icon is not present, double-click on SelectorSRVG.exe executable located in D:\remoteInstall\SDKDB\selector and wait for the icon to appear before clicking on it.

2. Ensure that "Generate report" (2) is set to either "Only after a successful job" if you want to generate reports only on successful process, or "Always" to systematically generate reports whatever the process succeeded or not.

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# XML exports

By default, we provide 3 XML templates:

### Report_template (v1).xml

Default SQL DB v1 XML export

```
<?xml version="1.0" encoding="utf-8"?>
<!-- ReportGenerator & Dashboard 2.x HTML/PDF Report template -->
<!-- Version "2.0.1.35" -->
<XmlReport xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <ReportDetails>
    <Site>Yannick Test</Site>
    <Date>210323_144729</Date>
    <Extras>
      <Label>id</Label>
      <Value>111</Value>
    </Extras>
    <Extras>
      <Label>combo_list</Label>
      <Value>Choice 1</Value>
    </Extras>
    <Extras>
      <Label>user_click</Label>
      <Value>Refurb  Script W/O Deploy </Value>
    </Extras>
    <Extras>
      <Label>exit_code</Label>
      <Value>7</Value>
    </Extras>
  </ReportDetails>
  <HardwareDetails>
    <Manufacturer>HP</Manufacturer>
    <ChassisType>Notebook</ChassisType>
    <Model>HP ProBook 445 G7</Model>
    <Serial>5CD1095S94</Serial>
    <UUID>A848E88F-9454-5432-E6AD-58B46A73E61D</UUID>
    <AssetTag> </AssetTag>
    <Processor>Advanced Micro Devices, Inc. RYZEN 3 4300U CPU @ 0.1GHz</Processor>
    <Memory>8192
    ChannelA0(8192/DDR4/3200)
    ChannelB0(0/Unknown/0)
    </Memory>
    <GraphicsCard>1920 x 1080 (14.1) | (1) - Renoir</GraphicsCard>
    <SoundCard>High Definition Audio Device</SoundCard>
    <Webcam>HP HD Camera</Webcam>
    <NetworkAdapter>1000 Mbps, [(2) - Wired, Realtek PCIe GbE Family Controller+Wireless, Intel(R) Wi-Fi 6 AX200 160MHz]</NetworkAdapter>
    <OpticalDrive>,  ,</OpticalDrive>
    <Motherboard>HP - 8730 - KBC Version 13.23.00</Motherboard>
    <BIOS>07/28/2021 - A848E88F-9454-5432-E6AD-58B46A73E61D</BIOS>
    <Battery>
    Hewlett-Packard  01468 2021/02/05 LIon
    </Battery>
      </HardwareDetails>
  <SdsProcessResults>
    <HardwareTestResult />
    <HardwareTestExResult />
    <WipeResult>OK</WipeResult>
    <OsDeployment></OsDeployment>
    <AppliedImage />
    <OsInstalled />
  </SdsProcessResults>
  <DataErasureReport>
    <ReportUUID>89d288b1-db2a-4954-8a93-dde7bbc3f1a1</ReportUUID>
    <StartTime>2023-01-30 14:29:34.000</StartTime>
    <EndTime>2023-01-30 14:29:39.000</EndTime>
  </DataErasureReport>
  <DiskReport>
    <DiskDetails>
      <Vendor>KIOXIA</Vendor>
      <Model>KBG40ZNV256G KIOXIA</Model>
      <Serial>11BPC2RIQW82</Serial>
      <Size>256 GB</Size>
      <Bus>NVMe</Bus>
      <Sectors>256060514304</Sectors>
      <BlocksPerSector>512</BlocksPerSector>
      <HealthStatus>1</HealthStatus>
      <HPA>-1</HPA>
      <DCO>-1</DCO>
      <PPID />
    </DiskDetails>
    <ErasureReport>
      <Duration>00:00:03</Duration>
      <Status>OK</Status>
    </ErasureReport>
    <WipeAlgo>
      <Method>Sanitize (NIST 800-88)</Method>
      <Rounds>*</Rounds>
    </WipeAlgo>
  </DiskReport>
</XmlReport>
```

106_5CD1095S94_HP ProBook 445 G7_2103

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## Report_template[DB Export] (v1).xml

Full XML export of all SQL DB tables v2 in SQL v1 format for ascending compatibility.

```
<?xml version="1.0" encoding="utf-8"?>
<!-- XML RAW Data export v2 -->
<!-- Version "2.0.1.36" -->
<XmlReportRaw xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <Location>Yannick Test</Location>
  <DeploymentExport>
    <deployment_id>106</deployment_id>
    <date>2023-01-30 14:27:45.000</date>
    <serial>5CD1095S94</serial>
    <mac>6C02E095FDFC</mac>
    <version>2</version>
  </DeploymentExport>
  <HardwareExport>
    <deployment_id>106</deployment_id>
    <cpu>Advanced Micro Devices, Inc. RYZEN 3 4300U CPU @ 2.1GHz</cpu>
    <motherboard>HP - 8730 - KBC Version 13.23.00 - PJWMD038JEW00V</motherboard>
    <bios>07/28/2021 - A848E88F-9454-5432-E6AD-58B46A73E61D</bios>
    <ram>8192 MB ChannelA0(8192/DDR4/3200) - ChannelB0(0/Unknown/0)</ram>
    <manufacturer>HP</manufacturer>
    <product>Notebook - HP ProBook 445 G7</product>
    <serial>5CD1095S94</serial>
    <nic>1000 Mbps, [(2) - Wired, Realtek PCIe GbE Family Controller+Wireless, Intel(R) Wi-Fi 6 AX200 160MHz]</nic>
    <optic_drive>,  ,</optic_drive>
    <fixed_disk>KBG40ZNV256G  [11BPC2RIQW82](256 GB)</fixed_disk>
    <gpu_card>Renoir</gpu_card>
    <sound_card>High Definition Audio Device</sound_card>
    <webcam>HP HD Camera</webcam>
  </HardwareExport>
  <ModuleExport>
    <deployment_id>106</deployment_id>
    <module_id>0</module_id>
    <module_id_xtra>877</module_id_xtra>
    <module_name>Script</module_name>
    <module_result>BATTERY_CHEMISTRY</module_result>
    <module_result_data>ID1:LIon</module_result_data>
    <start_date></start_date>
    <end_date></end_date>
    <closing_code></closing_code>
    <module_hwid>0</module_hwid>
  </ModuleExport>
  <ModuleExport>
    <deployment_id>106</deployment_id>
    <module_id>0</module_id>
    <module_id_xtra>878</module_id_xtra>
    <module_name>Script</module_name>
    <module_result>BATTERY_NAME</module_result>
    <module_result_data>ID1:RE03 (RE03045XL)</module_result_data>
    <start_date></start_date>
    <end_date></end_date>
    <closing_code></closing_code>
    <module_hwid>0</module_hwid>
  </ModuleExport>
  <ModuleExport>
    <deployment_id>106</deployment_id>
    <module_id>0</module_id>
    <module_id_xtra>879</module_id_xtra>
    <module_name>Script</module_name>
    <module_result>BATTERY_SERIAL</module_result>
    <module_result_data>ID1:01468 2021/02/05</module_result_data>
    <start_date></start_date>
    <end_date></end_date>
    <closing_code></closing_code>
    <module_hwid>0</module_hwid>
  </ModuleExport>
  <ModuleExport>
    <deployment_id>106</deployment_id>
    <module_id>0</module_id>
    <module_id_xtra>880</module_id_xtra>
    <module_name>Script</module_name>
    <module_result>BATTERY_VENDOR</module_result>
    <module_result_data>ID1:Hewlett-Packard</module_result_data>
    <start_date></start_date>
    <end_date></end_date>
    <closing_code></closing_code>
    <module_hwid>0</module_hwid>
  </ModuleExport>
  <ModuleExport>
    <deployment_id>106</deployment_id>
    <module_id>0</module_id>
    <module_id_xtra>881</module_id_xtra>
    <module_name>Script</module_name>
    <module_result>BATTERY_CURRENT_CAP</module_result>
    <module_result_data>ID1:31520</module_result_data>
    <start_date></start_date>
    <end_date></end_date>
    <closing_code></closing_code>
    <module_hwid>0</module_hwid>
  </ModuleExport>
[…]
```

106_5CD1095S94_HP
ProBook 445 G7_2103

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## Report_template[DB Export] (v2).xml

Full XML export of all SQL v2 DB tables v2.

```
<?xml version="1.0" encoding="utf-8"?>
<!-- XML RAW Data export v2 -->
<!-- Version "2.0.1.36" -->
<XmlReportRaw xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema">
  <Location>Yannick Test</Location>
  <Deployment>
    <deployment_id>106</deployment_id>
    <date>2023-01-30 14:27:45.000</date>
    <serial>5CD1095S94</serial>
    <mac>6C02E095FDFC</mac>
    <version>2</version>
    <SERVER_NAME>SRV-TESTSDS</SERVER_NAME>
  </Deployment>
  <Hardware>
    <deployment_id>106</deployment_id>
    <MOTHERBOARD_MANUFACTURER>HP</MOTHERBOARD_MANUFACTURER>
    <MOTHERBOARD_MODEL>8730</MOTHERBOARD_MODEL>
    <MOTHERBOARD_VERSION>KBC Version 13.23.00</MOTHERBOARD_VERSION>
    <MOTHERBOARD_SERIAL>PJWMD038JEW00V</MOTHERBOARD_SERIAL>
    <BIOS_VENDOR>HP</BIOS_VENDOR>
    <BIOS_VERSION>S79 Ver. 01.06.00</BIOS_VERSION>
    <BIOS_DATE>07/28/2021</BIOS_DATE>
    <SYSTEM_MANUFACTURER>HP</SYSTEM_MANUFACTURER>
    <SYSTEM_PRODUCT>HP ProBook 445 G7</SYSTEM_PRODUCT>
    <SYSTEM_SERIAL>5CD1095S94</SYSTEM_SERIAL>
    <SYSTEM_VERSION> </SYSTEM_VERSION>
    <SYSTEM_UUID>A848E88F-9454-5432-E6AD-58B46A73E61D</SYSTEM_UUID>
    <SYSTEM_SKU>112A3ET#ABF</SYSTEM_SKU>
    <ENCLOSURE_CHASSIS>Notebook</ENCLOSURE_CHASSIS><!--Desktop/Minitower/...-->
    <CPU_COUNT>1</CPU_COUNT><!--Nb CPU-->
    <DISK_COUNT>1</DISK_COUNT><!--Nb disks-->
    <RAM_MB>8192</RAM_MB><!--Total RAM size in MB: 16384/8192/4096...-->
    <BLUETOOTH>0</BLUETOOTH><!--0/1-->
    <BIOMETRICS>0</BIOMETRICS><!--0/1-->
    <RAM_CARDREADER></RAM_CARDREADER><!--0/1-->
    <TPM_VERSION>2.0</TPM_VERSION>
  </Hardware>
  <Battery>
    <DEPLOYMENT_ID>106</DEPLOYMENT_ID>
    <NAME>RE03 (RE03045XL)</NAME>
    <VENDOR>Hewlett-Packard</VENDOR>
    <CHEMISTRY>LIon</CHEMISTRY>
    <SERIAL>01468 2021/02/05</SERIAL>
    <WEAR_LEVEL>31</WEAR_LEVEL>
    <DESIGNED_CAP>45045</DESIGNED_CAP>
    <FULLCHARGED_CAP>31520</FULLCHARGED_CAP>
    <CURRENT_CAP>31520</CURRENT_CAP>
    <RATE>0</RATE>
    <POWERSTATE>1</POWERSTATE>
    <VOLTAGE>12309</VOLTAGE>
    <CYCLECOUNT>23</CYCLECOUNT>
  </Battery>
  <CPU>
    <DEPLOYMENT_ID>106</DEPLOYMENT_ID>
    <MANUFACTURER>Advanced Micro Devices, Inc.</MANUFACTURER><!--INTEL / AMD...-->
    <MODEL>RYZEN 3 4300U</MODEL><!--CORE I5-3330 / A4-5300...-->
    <SOCKET>None</SOCKET><!--Socket BGA1155 / Socket FM2 / Socket LGA1151 / Other ...-->
    <CPUID>860F01</CPUID><!--306A9 / 610F01 ...-->
    <CPUINDEX>0</CPUINDEX><!--Index starting at 0-->
    <NOMINAL_FREQUENCY>2700</NOMINAL_FREQUENCY><!--Nominal frequency in MHz: 3600 / 3400 / 3000 ...-->
    <MAX_FREQUENCY>3800</MAX_FREQUENCY><!--Maximum frequency in MHz: 3800 / 3400 / 3000 ...-->
    <CORES>4</CORES>
    <THREADS>4</THREADS>
    <L1CACHE>256</L1CACHE>
    <L2CACHE>2048</L2CACHE>
    <L3CACHE>4096</L3CACHE>
  </CPU>
  <DISK>
    <DEPLOYMENT_ID>106</DEPLOYMENT_ID>
    <MANUFACTURER>KIOXIA</MANUFACTURER>
    <MODEL>KBG40ZNV256G </MODEL>
    <FIRMWARE>HP00AE00</FIRMWARE>
    <SERIAL>11BPC2RIQW82</SERIAL>
    <CONNECTOR>PCIROOT(0)#PCI(0204)#PCI(0000)#NVME(P00T00L00)</CONNECTOR><!--PCIROOT(0)#PCI(1F02)#SATA(C00T00L00) /
ACPI(_SB_)#ACPI(PCI0)#ACPI(SAT0)#ACPI(CHN0)#ATA(C00T00L00) ...-->
    <WWN>0100000000000000CE38E0401A7A97B</WWN>
    <PPID></PPID>
    <SIZE_COMMERCIAL>256 GB</SIZE_COMMERCIAL><!--Size with unit: 1.00 TB / 500 GB ...-->
    <DISK_TYPE>SSD</DISK_TYPE><!--HDD/SSD-->
    <SIZE>256060514304</SIZE><!--Real size in Bytes: 1000204886016 / 500107862016 ...-->
    <REMAPPED_SECTOR>-1</REMAPPED_SECTOR><!--Nb of sectors remmaped: usually 0 / -1 if unknown ... -->
    <BPS>512</BPS><!--Nb of bits of per sector: 512 ...-->
    <BUS>17</BUS>
    <HEALTH>1</HEALTH>
    <HPA>-1</HPA>
    <DCO>-1</DCO>
    <RPM>1</RPM><!--Rotation per minute for HDD: 7200 / 5400 ...-->
    <LOGICAL>0</LOGICAL>
  </DISK>
  <GPU>
    <DEPLOYMENT_ID>106</DEPLOYMENT_ID>
    <MODEL>Renoir</MODEL>
    <PNP>PCI\VEN_1002&DEV_1636&SUBSYS_8730103C&REV_C4</PNP>
    <DRIVER>n/a</DRIVER>
  </GPU>
[…]
```

106_5CD1095S94_HP
ProBook 445 G7_2103

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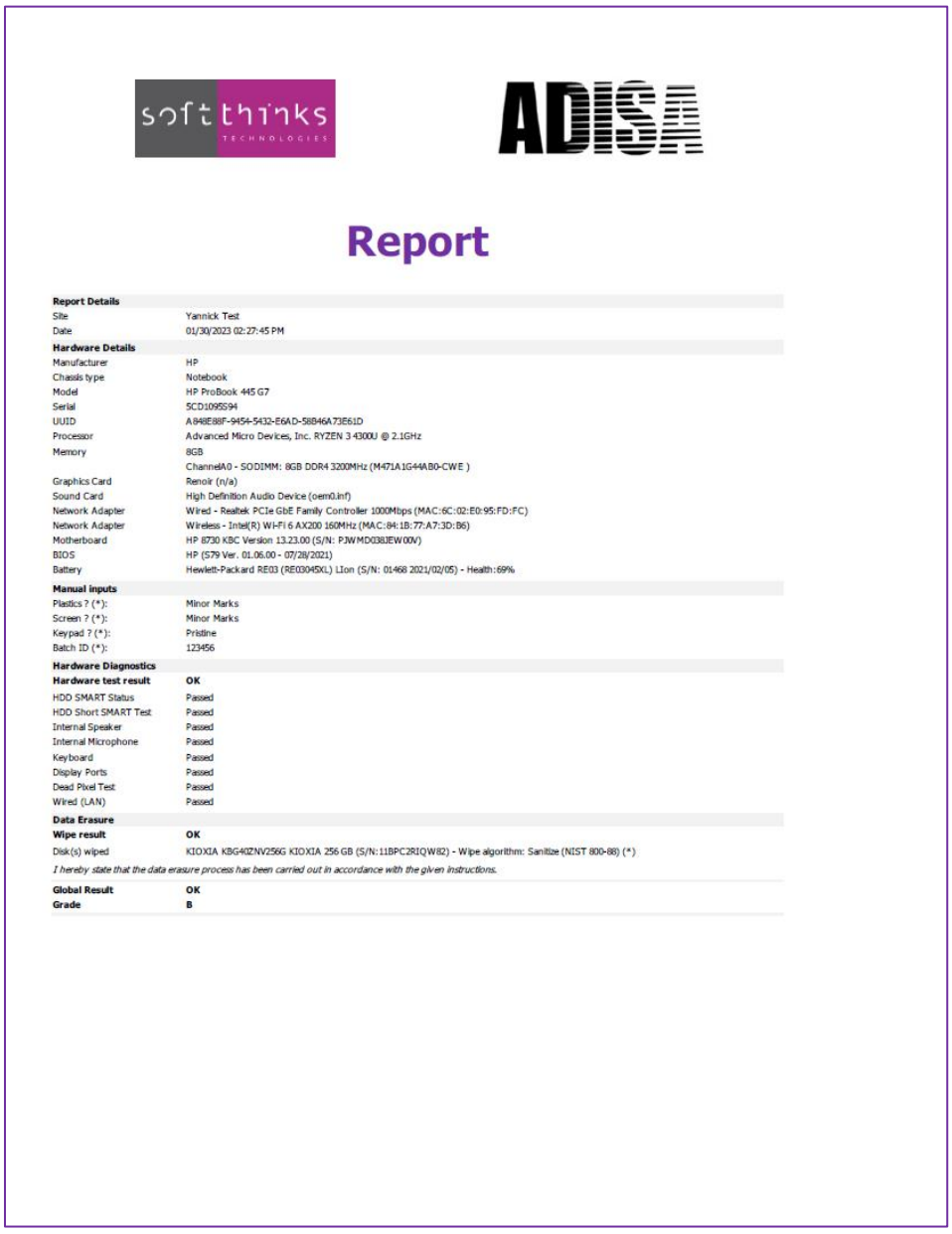
# HTML/PDF reports

We provide default HTML/PDF reports to illustrate the possibilities of our solution. You can totally customize same regarding the contents and look & feel or build your own ones.

### Basic HTML/PDF report (Report_template.html)

This report is almost the same than the PDF report generated with SDS versions up to 22.0, except that it's using a HTML template, more customizable, instead of a XLS template.



Report

| | |
|---|---|
| **Report Details** | |
| Site | Yannick Test |
| Date | 01/30/2023 02:27:45 PM |
| **Hardware Details** | |
| Manufacturer | HP |
| Chassis type | Notebook |
| Model | HP ProBook 445 G7 |
| Serial | 5CD1095S94 |
| UUID | A848E88F-9454-5432-E6AD-58846A73E61D |
| Processor | Advanced Micro Devices, Inc. RYZEN 3 4300U @ 2.1GHz |
| Memory | 8GB<br>ChannelA0 - SODIMM: 8GB DDR4 3200MHz (M471A1G44AB0-CWE ) |
| Graphics Card | Renoir (n/a) |
| Sound Card | High Definition Audio Device (oem0.inf) |
| Network Adapter | Wired - Realtek PCIe GbE Family Controller 1000Mbps (MAC:6C:02:E0:95:FD:FC) |
| Network Adapter | Wireless - Intel(R) Wi-Fi 6 AX200 160MHz (MAC:84:1B:77:A7:3D:B6) |
| Motherboard | HP 8730 KBC Version 13.23.00 (S/N: PJWMD038JEW00V) |
| BIOS | HP (S79 Ver. 01.06.00 - 07/28/2021) |
| Battery | Hewlett-Packard RE03 (RE03045XL) LIon (S/N: 01468 2021/02/05) - Health:69% |
| **Manual inputs** | |
| Plastics ? (*): | Minor Marks |
| Screen ? (*): | Minor Marks |
| Keypad ? (*): | Pristine |
| Batch ID (*): | 123456 |
| **Hardware Diagnostics** | |
| **Hardware test result** | **OK** |
| HDD SMART Status | Passed |
| HDD Short SMART Test | Passed |
| Internal Speaker | Passed |
| Internal Microphone | Passed |
| Keyboard | Passed |
| Display Ports | Passed |
| Dead Pixel Test | Passed |
| Wired (LAN) | Passed |
| **Data Erasure** | |
| **Wipe result** | **OK** |
| Disk(s) wiped | KIOXIA KBG40ZNV256G KIOXIA 256 GB (S/N:11BPC2R1QW82) - Wipe algorithm: Sanitize (NIST 800-88) (*) |
| *I hereby state that the data erasure process has been carried out in accordance with the given instructions.* | |
| **Global Result** | **OK** |
| **Grade** | **B** |

106_5CD1095S94_HP ProBook 445 G7_2103

106_5CD1095S94_HP ProBook 445 G7_2103

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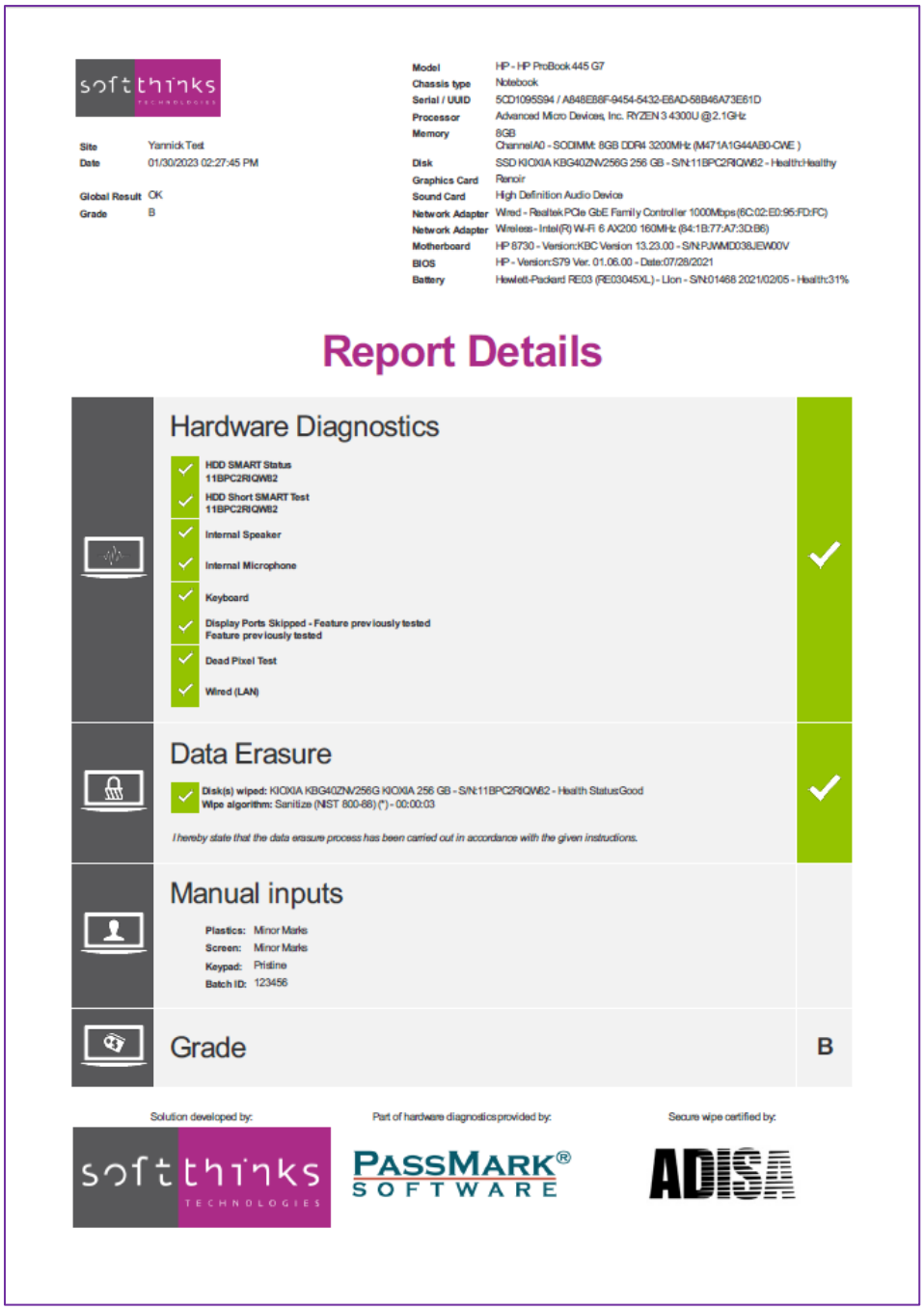
### Report_Template_Graphical (1).html

This template is dedicated to provide a nice report to your customer containing information which clearly identify his device and show him what has been done to ensure that it's working correctly. As for all HTML templates, you can change easily and totally the look and feel: you can put your company logo, change the fonts, the colors, the borders size and color…




B106_5CD1095S94_HP ProBook 445 G7_16(

B106_5CD1095S94_HP ProBook 445 G7_16(

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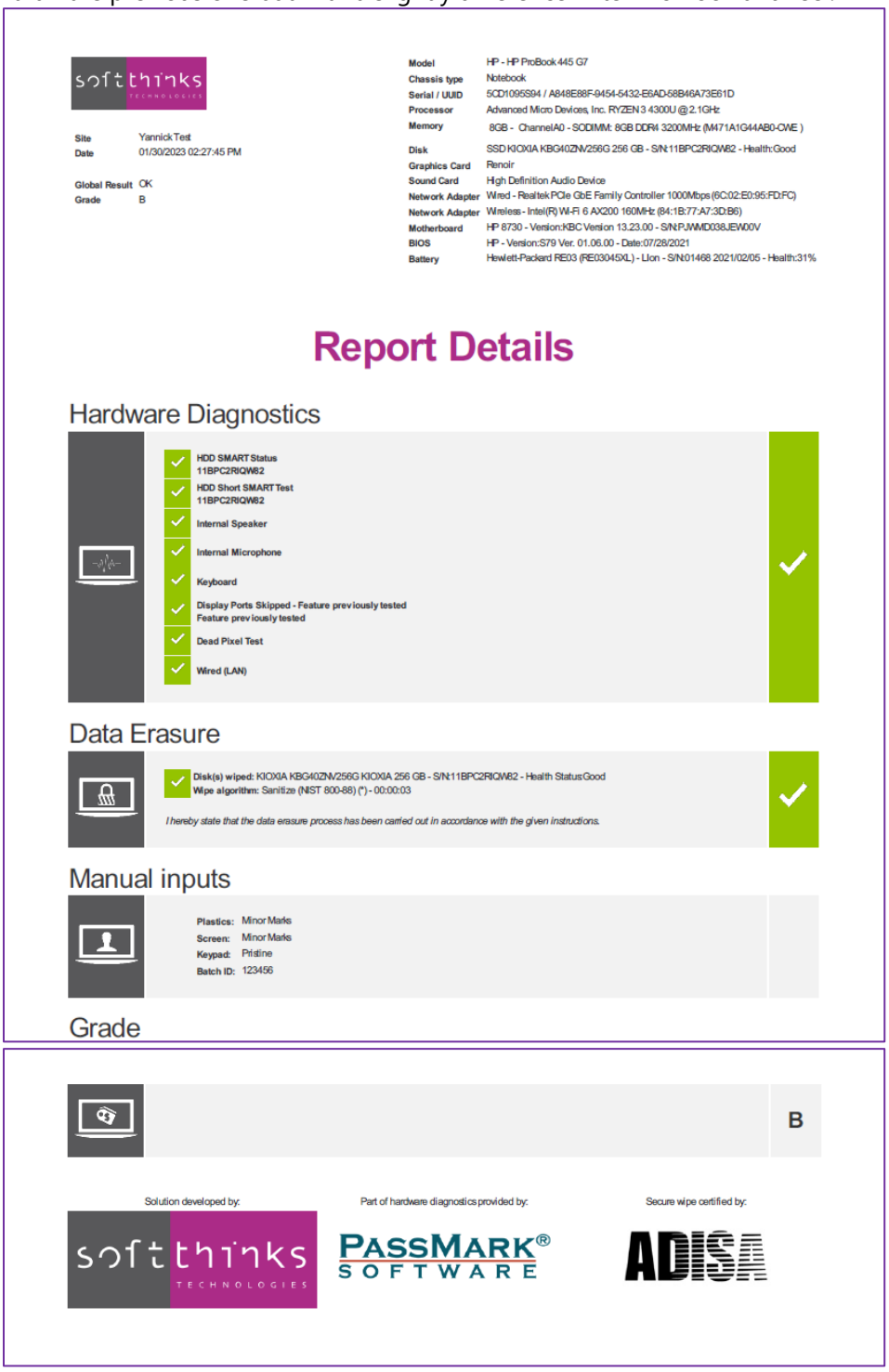
### Report_Template_Graphical (2).html

This template is similar than the previous one but with a slightly difference in term of look and feel.

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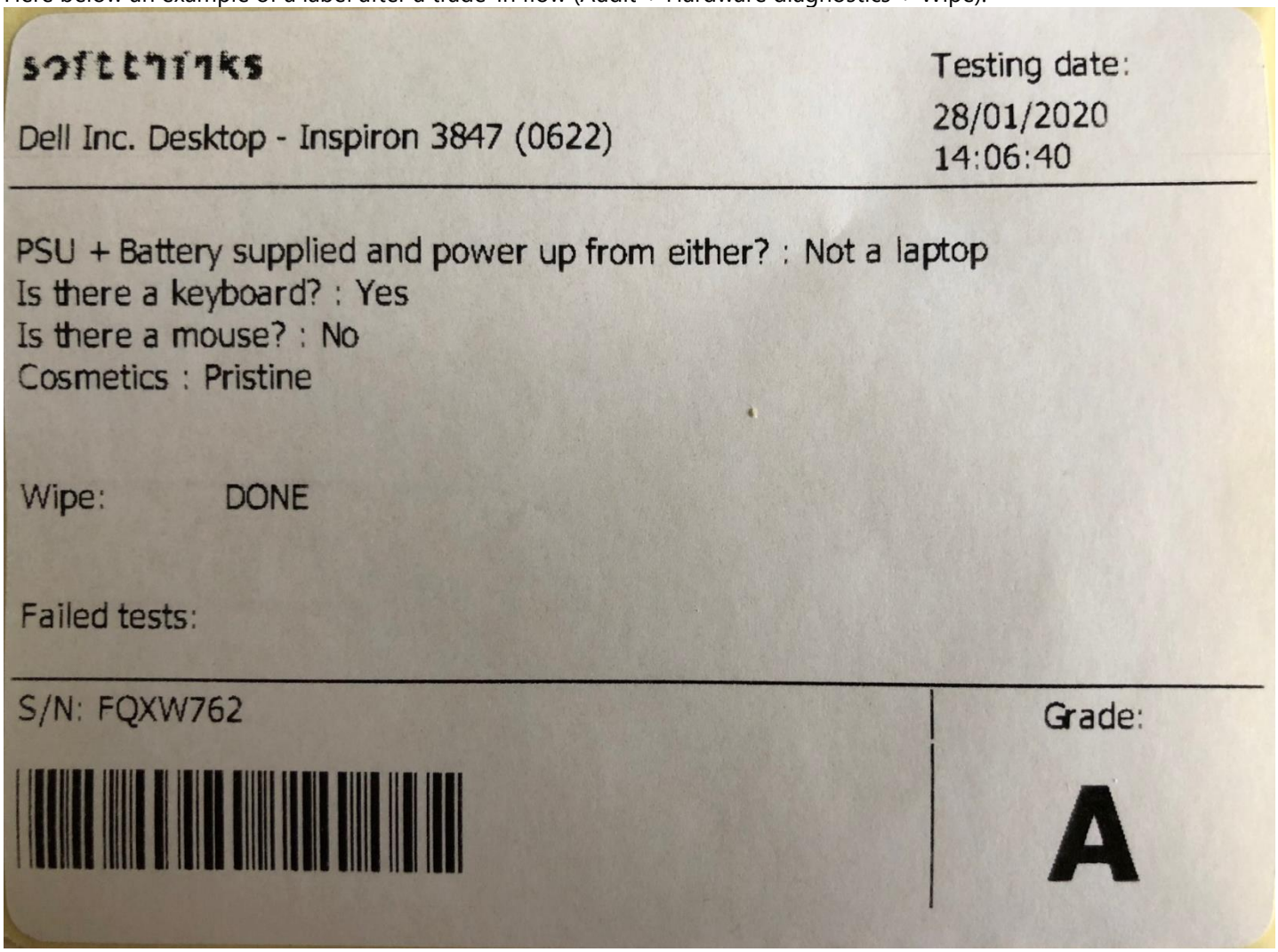
### Labels (Label_template.html)

This template illustrates the possibility to generate labels than can be automatically printed, as for any other report. This is useful to put on the device once it has been processed.

Here below an example of a label after a trade-in flow (Audit + Hardware diagnostics + Wipe):




In order to get the barcode displayed correctly, you need to install the font attached below on the SDS server:

FREE3OF9.TTF

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# Templates keywords and grammar

| Tags | |
|---|---|
| {%IDS_*%} | String replaced by the matching localized value from TemplateIds.xml |
| {%SITE%} | Location |
| {%NOW%} | Current date |
| {%DI%} | Deployment ID |
| {%<TABLE>.<ATTRIBUTE>%} | Replaced by the value of the attribute <ATTRIBUTE> from the table <TABLE><br>Ex: %HARDWARE.SYSTEM_SERIAL% returns SYSTEM_SERIAL number from the table HARDWARE |
| {%MODULE[<MODULE>].<ATTRIBUTE>%} | Replaced by the value of the attribute <ATTRIBUTE> from the table MODULE for the module <MODULE> (module string name SDSxxx)<br>Ex: %MODULE[SDSShredder].MODULE_RESULT% returns the result of the module SDSShredder |
| {%MODULE_XTRA[<MODULE>].<ATTRIBUTE>%} | Replaced by the value of the attribute <ATTRIBUTE> from the table MODULE_XTRA for the module <MODULE> (module string name SDSxxx)<br>Ex: %MODULE_XTRA[SDSWelcome].ASSET_ID% returns the asset ID entered in ASSET_ID field in SDSWelcome or an empty string if there is no ASSET_ID field in SDSWelcome |
| {%MODULE_XTRA[<MODULE>(<XTRA_ID>)].<ATTRIBUTE>%} | Replaced by the value of the attribute <ATTRIBUTE> from the table MODULE_XTRA for the module <MODULE> and <XTRA_ID> matching MODULE_XTRA.XTRA_ID<br>Ex: %MODULE_XTRA[SDSQuestion(12)].XTRA_VALUE% returns the response entered by the operator in the module SDSQuestion for the question id 12 |
| {%<TABLE>[<ATTRIBUTE1>=<TABLE2>.<ATTRIBUTE2>].<ATTRIBUTE>%} | Replaced by the value of the attribute <ATTRIBUTE> in the table <TABLE> for the record with the attribute <ATTRIBUTE1> matching the <ATTRIBUTE2> from <TABLE2><br>Ex: %DISK[SERIAL=WIPED.SERIAL].HPA% : return the HPA attribute from the table DISK for the record having its SERIAL attribute matching the SERIAL from the table WIPED. WIPED table doesn't contain all DISKS information and so in order to get those information we need to query the DISK table for the current WIPED disk serial |
| {%TESTS(<TEST_ID>).<ATTRIBUTE>%} | Replaced by the value of the attribute <ATTRIBUTE> from the table TESTS for the <TEST_ID> specified |
| {%SCRIPT(<Script SEND_EVENT Id>)%} (v 2.0.0.33) | Replaced by the value <MODULE.MODULE_RESULT_DATA> when <MODULE.MODULE_RESULT>=<Script SEND_EVENT_ID> and <MODULE.MODULE_HWID>=0 |
| **Statements** | |
| {%FOR EACH <TABLE>%}<br>[…]<br>{%END FOR EACH <TABLE>%} | Loop statement<br>Ex: To put all tests<br>{%FOR EACH TESTS%}<br><tr><td>%FORMAT(TESTS.TEST_ID)%</td><td>%FORMAT(TESTS.TEST_RESULT)%</td></tr><br>{%END FOR EACH TESTS%} |
| {%IF <tag><operator><val>%}<br>[…]<br>{%END IF <tag><operator><val>%} | Condition statement<br><tag> can be any of the tags above<br><operator> can be = \| != \| < \| > \| <= \| >=<br><value> is the value to compare with the <tag><br>Ex: To put only successful tests in the report<br>{%IF TESTS.TEST_RESULT=0%}<br><tr><td>%FORMAT(TESTS.TEST_ID)%</td><td>%FORMAT(TESTS.TEST_RESULT)%</td></tr><br>{%END IF TESTS.TEST_RESULT=0%} |
| **Formatting** | |
| {%FORMAT(<tag>,<format spec>[\|<format spec>[\|…]])%} | Interpret the value returned by the tag in a more readable<br>Current format specifications available:<br>• INVERSE_PERCENTAGE → return (100-value)<br>• PERCENTAGE_SYMBOL → add % character at the end |

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| | |
|---|---|
| | • INTEGER → return the integer value contained in a string (Ex: "DISK 2" → "2")<br>• MB_TO_GB → convert MB to GB without decimal (divide by 1024)<br>• MHZ_TO_GHZ → convert MHz to GHz with 1 decimal (divide by 1024)<br>• LAST_CIRCUMFLEX→ return the substring after the last '^' character (for SMART attributes)<br>• REMOVE_QUESTION_MARK → remove '?' from the string (for SDSQuestion typically)<br>• REMOVE_MANDATORY_MARK → remove '*' from the string (for SDSQuestion typically)<br>• REMOVE_COLON → remove ':' from the string (for SDSQuestion typically)<br>• ADD_COLON_IF_NOT_PRESENT → add ':' at the end if not already present<br>• ADD_DOUBLEQUOTE_IF_NUMERIC → add '"' after a numeric value (screen size for example)<br>• TRIM → remove trailing spaces<br>Ex: To put the label of a test instead of its numeric ID<br>`%FORMAT(TESTS.TEST_ID)%` |

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# Configuration file

To generate one or more report/export at the end of each process, you will need to customize the file ReportGenerator.ini:

```
;;;
```

```
;templateFilePath is the path of the input file to use as template. The template file format has to be text file
based (HTML,XML,CSV...)
;report_template.html is matching ReportGenerator v1 PDF output format
templateFilePath=.\report_template.html

;reportFilename is the filename of the report to generate
;Its file extension has to match the template file extension, excepted for PDF output which is generated from
HTML template
reportFileName={%DI%}_{%HARDWARE.SYSTEM_SERIAL%}_{%MODULE_XTRA[SDSWelcome].ASSET_ID%}_{%NOW%}.PDF

;To send the report by email, set SendByEmail value to 1 and fill [Email] section
SendByEmail=0
;If you want to use a specific subject and/or message and/or receiver, you can specify them here. Else we will
use [Email] section values
;Both email subject and message can contains tags with the same grammar than for the template (see at the end of
this file)
EmailSubject=Report {%MODULE_XTRA[SDSWelcome].ASSET_ID%}
EmailMessage=Please find attached the report generated on {%NOW%} for the device {%HARDWARE.SYSTEM_SERIAL%}.
;Email address to send the report to. For multiple receivers, separate them by a comma
EmailReceiver=address1@domain.com,address2@domain.com

;To push the report to a FTP, set PushToFTP value to 1 and fill [FTP] section.
PushToFTP=0
;If you want to use a specific FTP, you can specify it here. Else we will use [FTP] section values
FTPServerIP=
FTPPort=
FTPLogin=
FTPPassword=
FTPFolder=

;To print the report automatically with the default printer configured on SDS server, set Print value to 1
Print=0


;;;
```

```
;To send the report by email, set SendByEmail value to 1 and fill [Email] section.
SendByEmail=0

;If you want to use a specific subject and/or message and/or receiver, you can specify them here. Else we will
use [Email] section values
;Both email subject and message can contain tags with the same grammar than for the template (see at the end of
this file)
EmailSubject=
EmailMessage=
EmailReceiver=

;To push the report to a FTP, set PushToFTP value to 1 and fill [FTP] section.
PushToFTP=0
;If you want to use a specific FTP, you can specify it here. Else we will use [FTP] section values
FTPServerIP=
FTPPort=
FTPLogin=
FTPPassword=
FTPFolder=

;To print the report automatically with the default printer configured on SDS server, set Print value to 1
Print=0

;;;
```

```
[Report_4]
Enable=1
PageSize=Letter
templateFilePath=.\report_template[DB Export] (v1).XML
reportFolderPath=C:\Softthinks\Reports\Wipe
reportFileName={%DI%}_{%HARDWARE.SYSTEM_SERIAL%}_{%MODULE_XTRA[SDSWelcome].ASSET_ID%}_{%NOW%} [DB Export]
(v1).XML
reportCreationTimeFormat=%Y%m%d_%H%M%S
deploymentDateTime=%m/%d/%Y %I:%M:%S %p

;To send the report by email, set SendByEmail value to 1 and fill [Email] section.
SendByEmail=0

;If you want to use a specific subject and/or message and/or receiver, you can specify them here. Else we will
use [Email] section values
;Both email subject and message can contains tags with the same grammar than for the template (see at the end of
this file)
EmailSubject=
EmailMessage=
EmailReceiver=

;To push the report to a FTP, set PushToFTP value to 1 and fill [FTP] section.
PushToFTP=0
;If you want to use a specific FTP, you can specify it here. Else we will use [FTP] section values
FTPServerIP=
FTPPort=
FTPLogin=
FTPPassword=
FTPFolder=

;To print the report automatically with the default printer configured on SDS server, set Print value to 1
Print=0

;;;
```

```
FTPFolder=

;To print the report automatically with the default printer configured on SDS server, set Print value to 1
Print=0


;;;
```

```
;;;
```

# Command line

To generate a report/export at any time, you can use ReportGenerator.exe (SDKDB\selector\Reports\WipeReport\) command line, specifying either the deployment ID, the device Serial number or the device MAC address, the settings to access to the SDS SQL Database, and the report settings:

```
REPORTGENERATOR.EXE <DEPLOYMENT ID>[ <DEPLOYMENT ID>[...]] | /DEVICESN:<DEVICE S/N>[,<DEVICE S/N>[,...]] |
/DEVICEMAC:<DEVICE MAC>[,<DEVICE MAC>[,...]]
  /SQL:SQLDBName="<SQL database name>";
       SQLServerIP=<SQL server IP address>;
       SQLUserName="<SQL user name>";
       SQLPassword="<SQL password>"
  /REPORT:Template="<template file path>";
       OutputFile="<output file path>";
       Location="<location>";
       [Language=<report language ("English" if not specified)>;]
       [DateTime="<date time format>";]
       [PageSize=<page size>;]
       [SendByEmail;
            EmailSubject="<email subject>";
            EmailReceiver="<email receiver>[,<EmailReceiver>[...]]";
            EmailMessage="<email message>"]
       [PushToFTP;
            FTPServerIP=<FTP server IP>;
            FTPLogin="<FTP login>";
            FTPPassword="<FTP password>"
            [FTPFort=<FTP port>;]
            [;FTPFolder="<FTP folder>"]]
  [/REPORT:... [/REPORT:...]]
  [/EMAIL_SETTINGS:
       SMTPServer=<SMTP server>:<SMTP port>;
       EmailLogin=<Email login>;
       EmailPassword=<Email password>;
       SenderName=<Sender name>;
       SenderMail=<Sender mail>;
       ReplyTo=<Reply to mail address>]
```

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# Testing under Windows (after deployment)

Windows Test Manager will allow you to run tests on the computers in Windows environment, for example after repair, and generate a report:

- Check Windows environment
  - Device manager
  - System files signature
  - System events
- Check hardware
  - Microphone
  - Speaker
  - Headset
  - Webcam
  - HDD/SSD
  - Keyboard
  - Any other component through BurnInTest
- Network settings
  - LAN
  - WAN
- 3rd party custom tests

You can customize the tests and add your own tests through SDS Console (Settings > Database > Test settings).

Windows Test Manager can be automated and perform the tests automatically if they don't require user interaction.

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# Windows check

This window will check your device manager if all the devices' drivers are signed and if there are no error:

In case you have an error, the device manager will open.
To check if the drivers are signed. To get more details click on "View log"
To check if there are no error in the event viewer. To get more details click on "Open event viewer"

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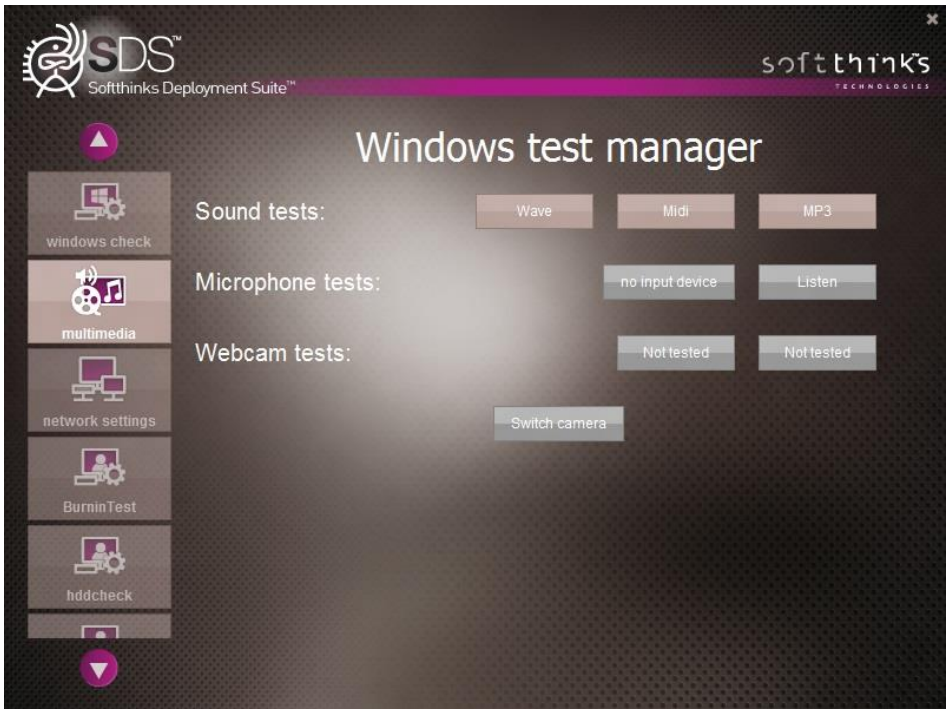
# Multimedia

In this window, you will check the multimedia test.

- Sound : wave, midi, mp3
- Mic : record and listen to it
- Webcam: record and watch it.




**In manual mode, you need to test EVERYTHING to go to the next step**

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# Network Settings

In this window, you will check the networks.

- The available wireless networks
- All other networks

You can also click on « **Edit** » if you need to enter the security key

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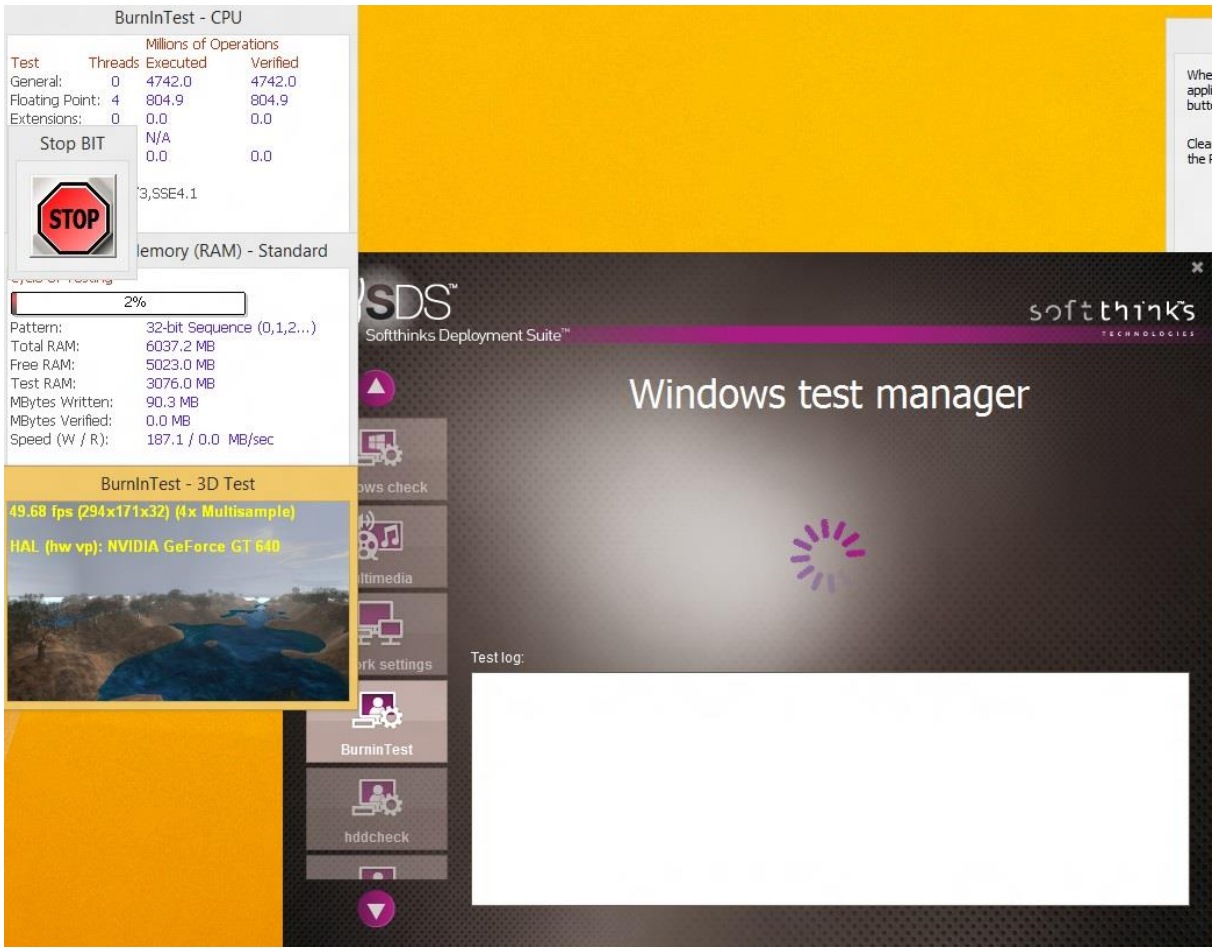
# BurnInTest (OEM custom test)

You can launch BurnInTest directly and automatically from WTM. See BurnInTest for more details.




At the end of the test, the process generates a log file.

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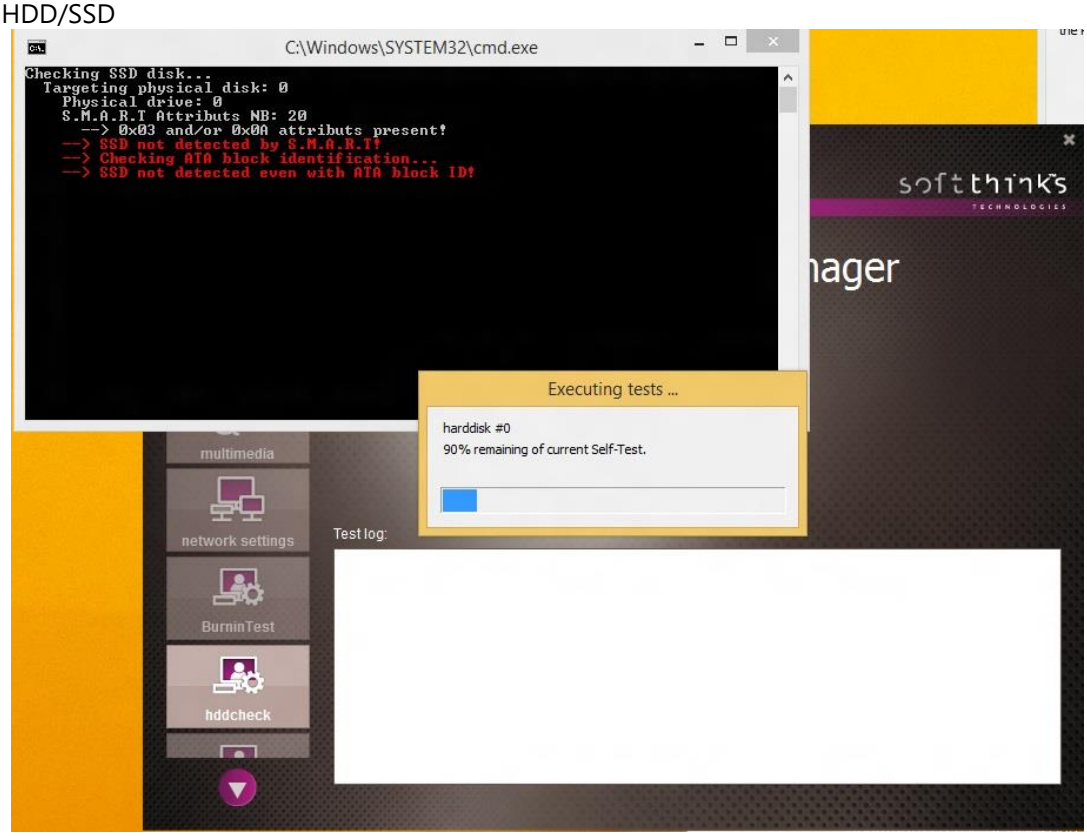
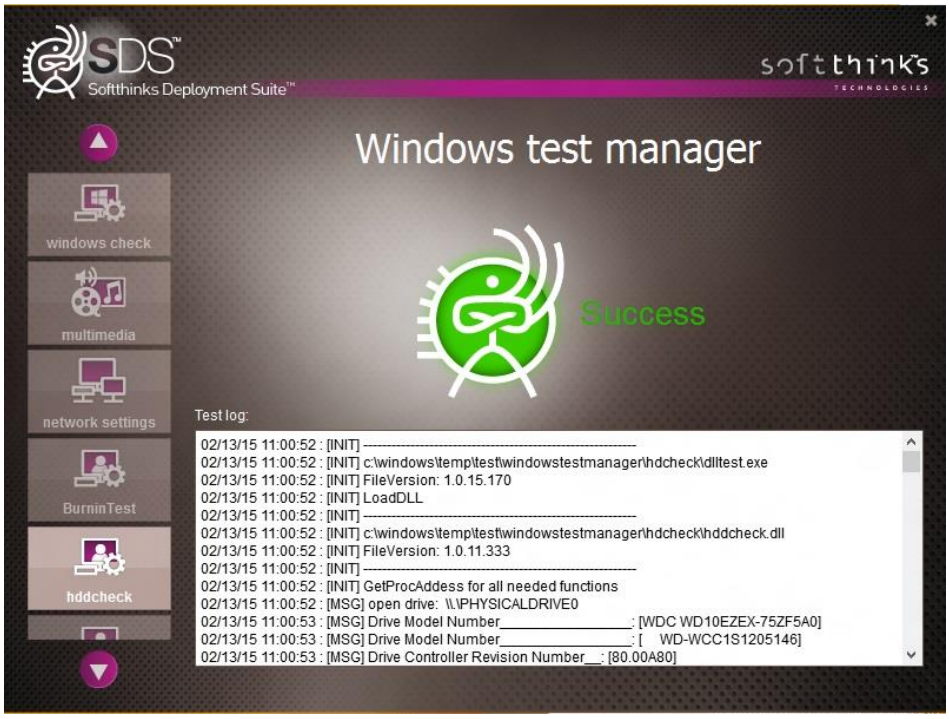
# HDD Check (Custom test)

Check you HDD/SSD

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## Keyboard Test

Keyboard test allows you to check each key of your keyboard.

## Custom report

The « Custom report » ensures that all actions are performed correctly by the technician:

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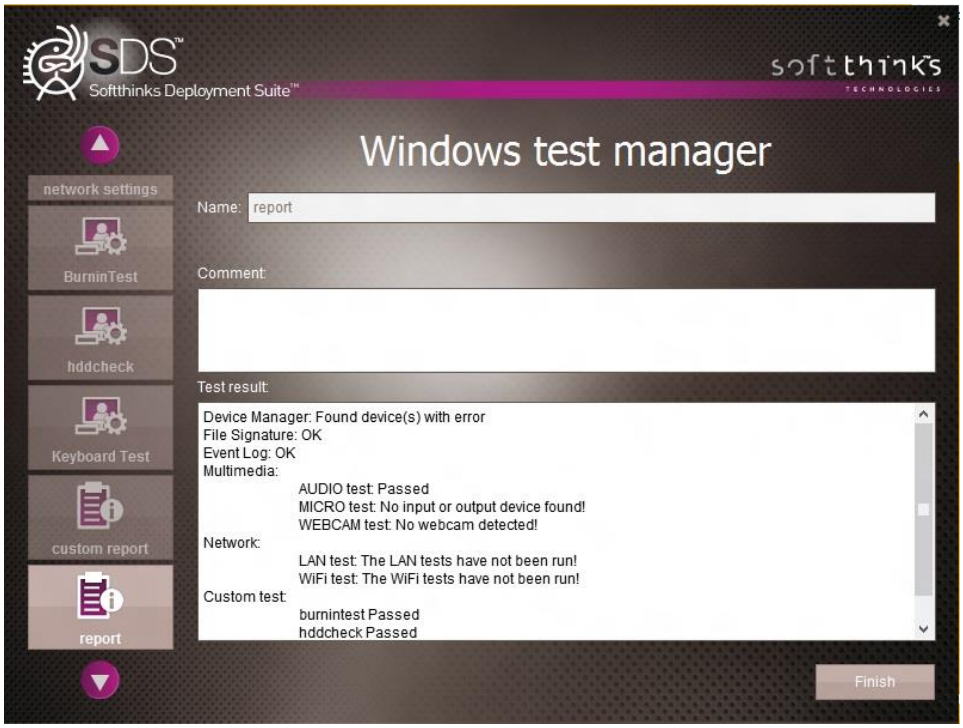
# Report




In this window you have to name the report that was created.  You can also add a comment.

If you click on “finish”, a report (**WindowsTestManager log.xml**) will be created and sent to the server.

**In auto mode all windows are switched automatically and this windows is automatically filled and logs are uploaded on server .**

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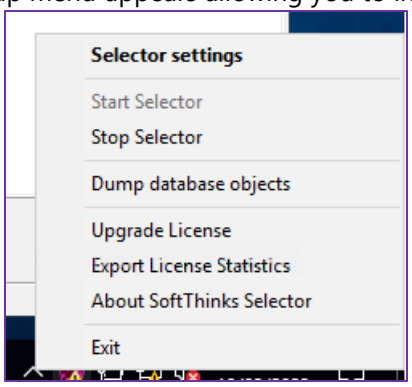
# Interacting with Selector service on SDS Server

During SDS installation, a service called "Selector" ("SelectorSRV.exe" or "SelectorSRV_X64.exe" in the services list) is configured to start automatically with the OS. This service is managing the communication between the devices processed, the SDS server and the SQL database. A SelectoSRVG.exe process is automatically run on startup to interact with the service. It displays an icon in the system tray area of the taskbar. If this icon is not present, double-click on SelectorSRVG.exe executable located in D:\remoteInstall\SDKDB\selector and wait for the icon to appear.

In order to avoid production interruptions and data loose, Selector is using a memory buffer when the connection to the SQL DB is temporary lost, typically during short network disconnections. A warning overlay on the icon indicates that we are currently disconnected from SQL DB. **While this indicator is visible you should not stop the service or shutdown/restart the SDS server else all the data buffered in memory will be lost.**

When you click on the system try icon, a popup menu appears allowing you to interact with Selector service:

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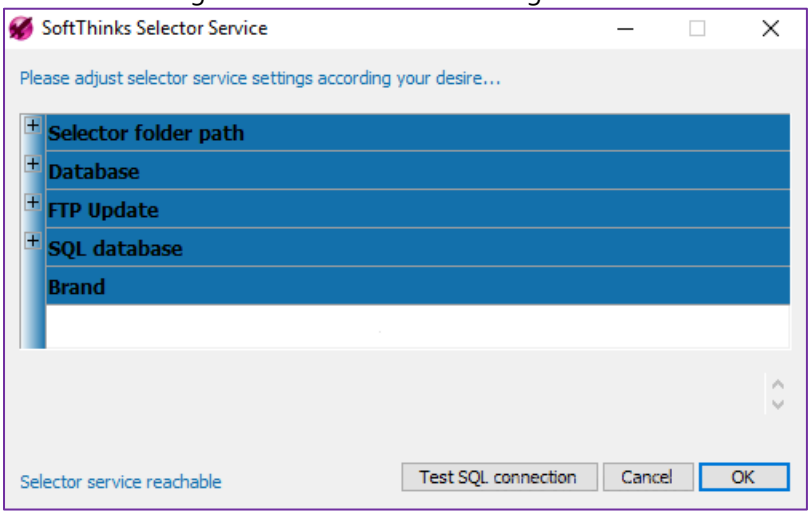
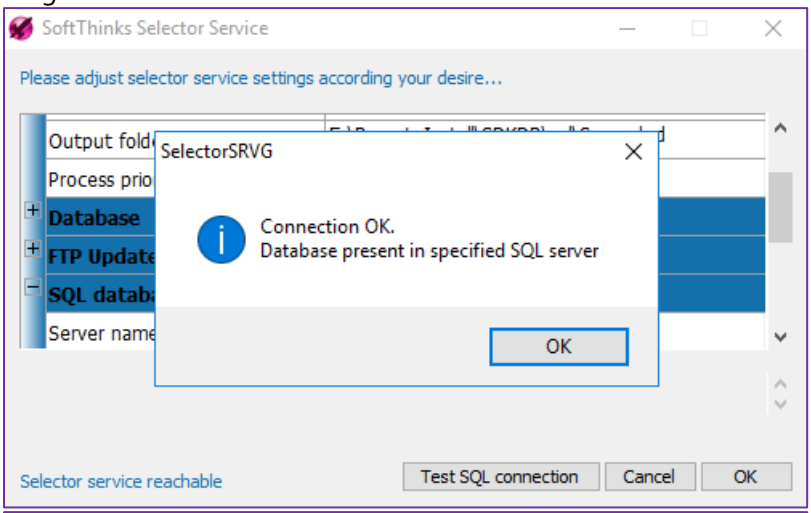
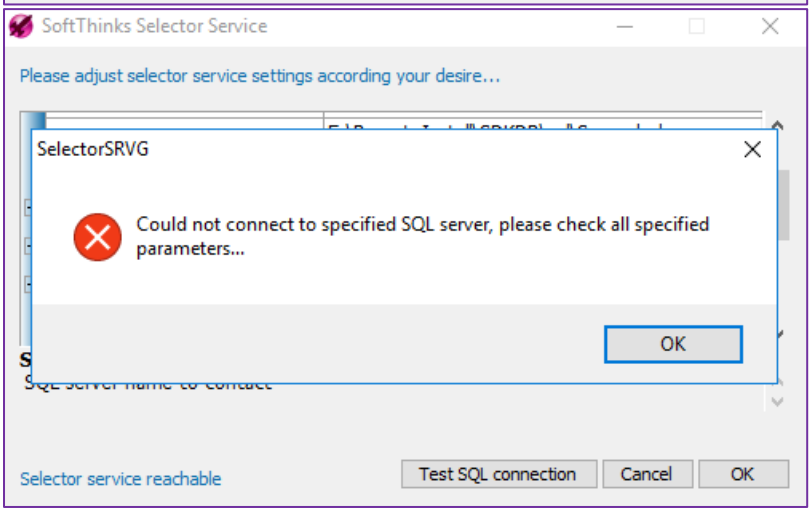
# Modifying Selector settings

The first option, allows you to review or change the Selector service settings:




You have also a button "Test SQL connection" at the bottom allowing you to verify that you can access the SQL database defined in "SQL database" setting:

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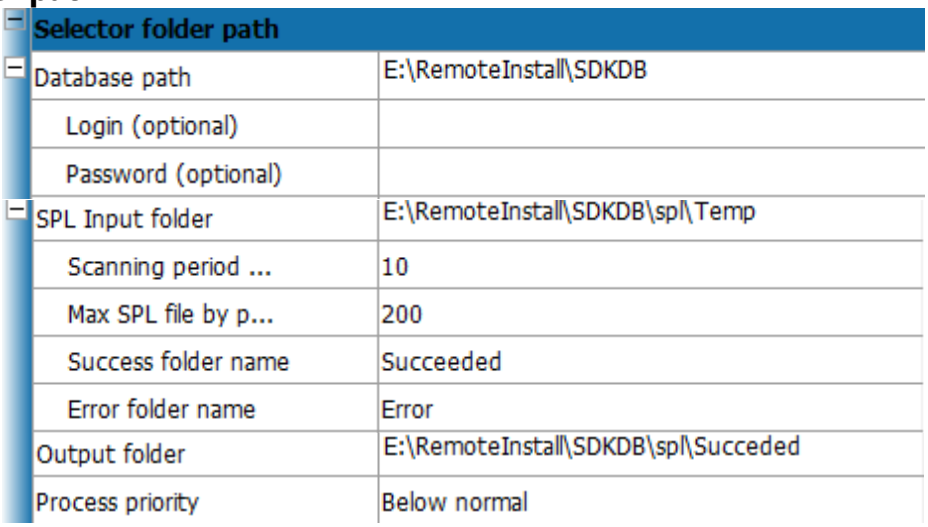
## Selector folder path



| Selector folder path | |
|---|---|
| Database path | E:\RemoteInstall\SDKDB |
| Login (optional) | |
| Password (optional) | |
| SPL Input folder | E:\RemoteInstall\SDKDB\spl\Temp |
| Scanning period ... | 10 |
| Max SPL file by p... | 200 |
| Success folder name | Succeeded |
| Error folder name | Error |
| Output folder | E:\RemoteInstall\SDKDB\spl\Succeded |
| Process priority | Below normal |

- Database path: path to SDS database structure
  - Login: Optional login to access the database path (for network shared database)
  - Password: Optional login to access the database path (for network shared database)

- SPL Input folder: path where to search for SPL files to process
  - Scanning period (1-100 Sec): Time between two input folder scan
  - Max SPL file by period (1-1000): Maximum amount of SPL files which can be used on a scan
  - Success folder name: name of the folder where SPL files are moved to after having successfully processed
  - Error folder name: name of the folder where SPL files are moved to when we failed to process

- Output folder: path to the folder where ini files are created

- Process priority: this is the thread priority used to translate SPL files:
  - Highest
  - Above normal
  - Normal
  - Below normal
  - Lowest

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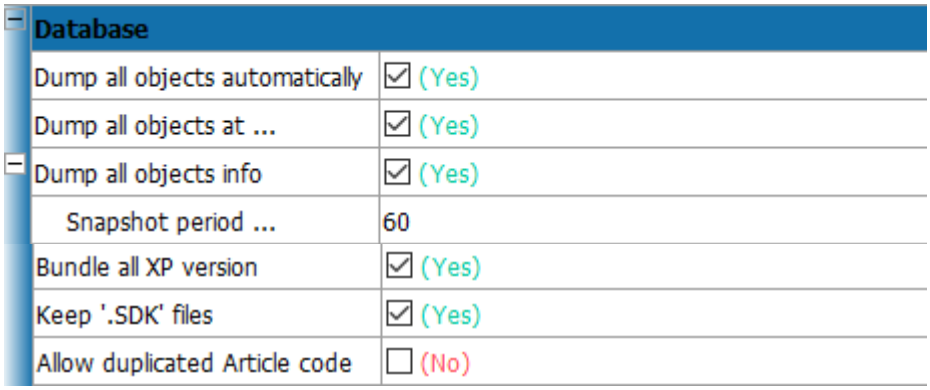
### Database

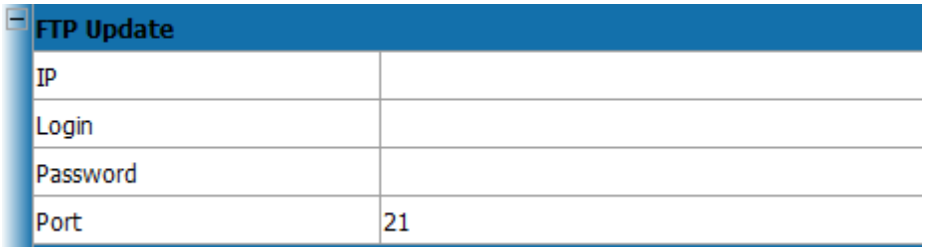


| Database | |
|---|---|
| Dump all objects automatically | ☑ (Yes) |
| Dump all objects at ... | ☑ (Yes) |
| Dump all objects info | ☑ (Yes) |
| Snapshot period ... | 60 |
| Bundle all XP version | ☑ (Yes) |
| Keep '.SDK' files | ☑ (Yes) |
| Allow duplicated Article code | ☐ (No) |

- Dump all objects automatically: automatically create a database objects snapshot after a DB modification
- Dump all objects at service start: automatically create a database objects snapshot at service startup
- Dump all objects info: automatically create a database objects snapshot every <x> hours
    - Snapshot period (60-10080 min): Delay between 2 snapshots (from 1h to 1 week)
- Bundle all XP version: bundle all XP OS version as one unique OS (less restrictive)
- Keep '.SDK' files: Debug purpose only setting used to keep translation codes files used to create INI files
- Allow duplicated Article code: keep all items that have the same article code instead stopping on first one found

### FTP Update

Set up this part to update your BIOS, APPS, DRV from FTP.



| FTP Update | |
|---|---|
| IP | |
| Login | |
| Password | |
| Port | 21 |

- IP: FTP IP address
- Login: Login to access to the FTP
- Password: Password to access to the FTP
- Port: TFP port (default = 21)

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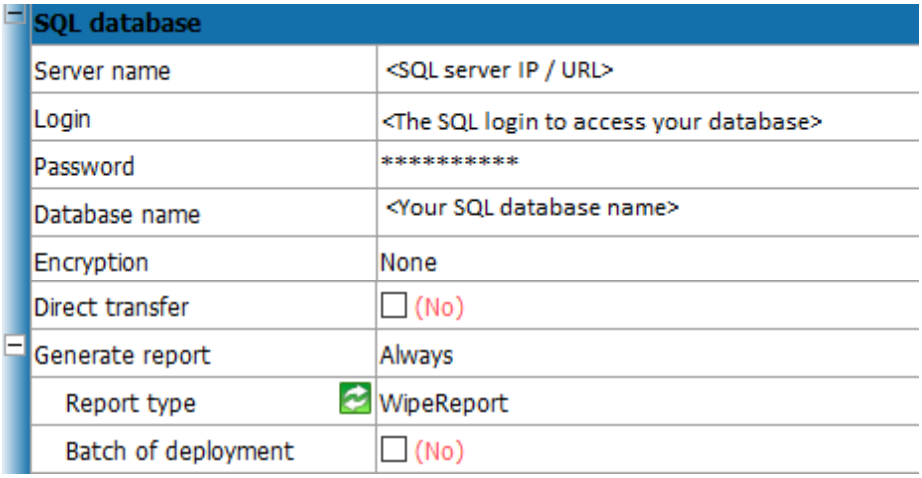
### SQL Database



| SQL database | |
|---|---|
| Server name | <SQL server IP / URL> |
| Login | <The SQL login to access your database> |
| Password | ********** |
| Database name | <Your SQL database name> |
| Encryption | None |
| Direct transfer | ☐ (No) |
| Generate report | Always |
| Report type | WipeReport |
| Batch of deployment | ☐ (No) |

- Server name: SQL server hosting the SQL DataBase
- Login: login to access to the SQL DataBase linked to this SQL server
- Password: password to access to the SQL DataBase linked to this SDS server
- Database name: name of the SQL DataBase linked to this SDS server
- Encryption: use or not communication data encryption
- Direct transfer: force to transfer immediately data to SQL
- Generate report: Generate report(s) systematically at the end of all process / only after a successful process / never
    - Report type: Deprecated. You should not change this setting
    - Batch of deployment: Generate reports

## Starting/Stopping Selector

Selector is automatically started with the OS so you should not have to stop or start the service. Those functions should be used only if Softthinks support ask you to do so. Except in this case, you should never use them.

## Dumping database objects

This is an internal feature which you should not use, except if asked by our support team.

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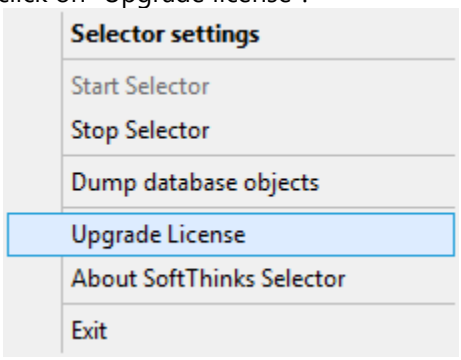
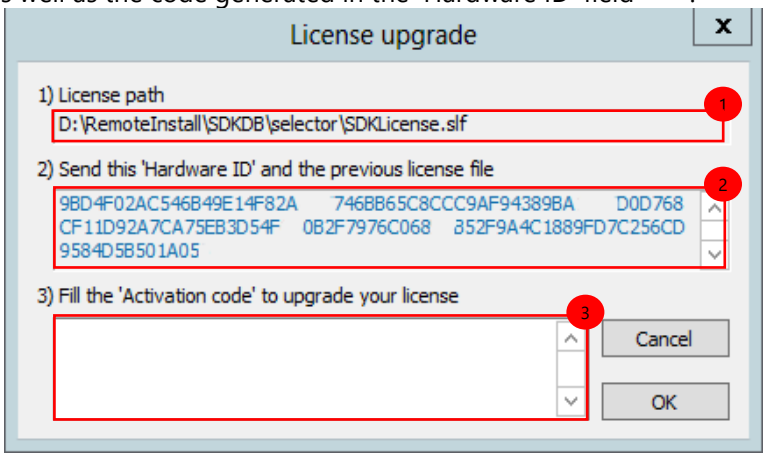
# Reactivating the License

Once your license has expired, you can reactivate it by following the instructions below:

1. In the contextual menu appearing, click on “Upgrade license”:




2. Send an email to your account manager with the SDKLicense.slf file located in the ‘License path’ 1 indicated in the dialog screen below, as well as the code generated in the ‘Hardware ID’ field 2 :




3. Enter the code which will be sent to you in the ‘Activation code’ field 3 .

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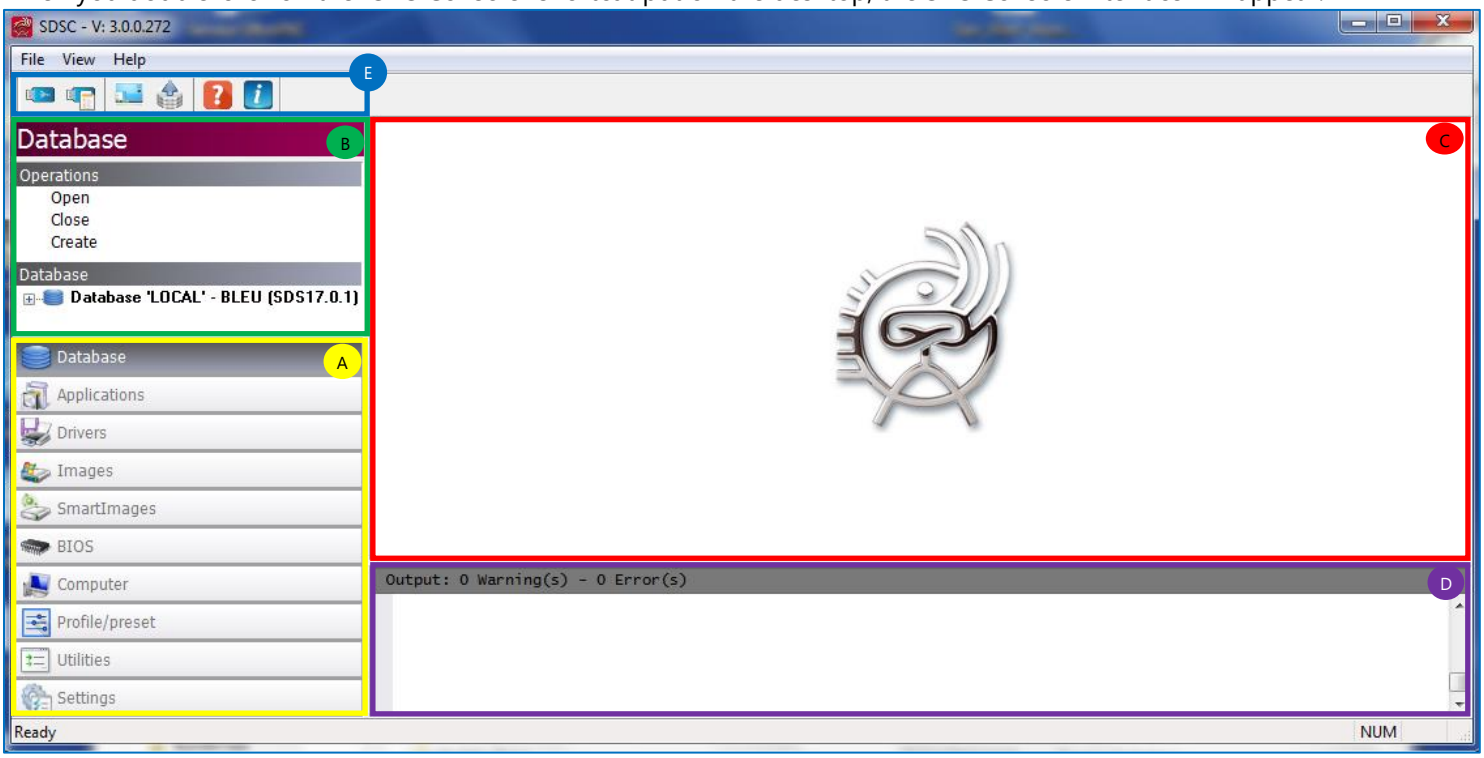
# Managing SDS database and components through SDS Console (SDSC)

The SDS console is installed by default with SDS installer on SDS server, and you can also install it with a dedicated installer on other systems.
The SDS console allows you to administer and configure your SDS database, including the images, drivers, applications, and offers some useful tools.

- Multithreaded Interface – Accomplish other tasks while waiting for slow processes to complete.
- Visible Logging Console – View logs in real-time and track processes as they occur.
- Workflow-based Configurations – Each process uses a consistent workflow so no dependent steps can be omitted.

When you double-click on the "SDS Console" shortcut put on the desktop, the SDS Console interface will appear:




This user interface is split into different areas:

- The main menu A on the bottom left which allows you to select a set of tools to use. Each tool is tied to a specific task, such as Database, Applications, Drivers, Images, SmartImages, BIOS, Computer, Profile/Preset, Utilities or other Settings. Click on a tool to select it and bring up more options.

- The sub menu B above is dynamically updated depending on the item chosen in the main menu and will offer you the operations that can be performed with this element ("Open", "Close" and "Create" for the Database as shown in the screenshot above). Select an option here to open a workflow tab in the main window.

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- The main window or Operations Workflow Screen C on the right. Each operation in use receives a separate tab on this screen allowing multiple tasks to be completed simultaneously. Once a Tool Operation or Object has been selected, a screen opens to allow the System Administrator to perform other actions through a workflow

- The output area D on the bottom right where all status messages will be logged. The information contained here can be printed, exported, copied to the clipboard or cleared. Right click in the window for all possible options.

- The toolbar E

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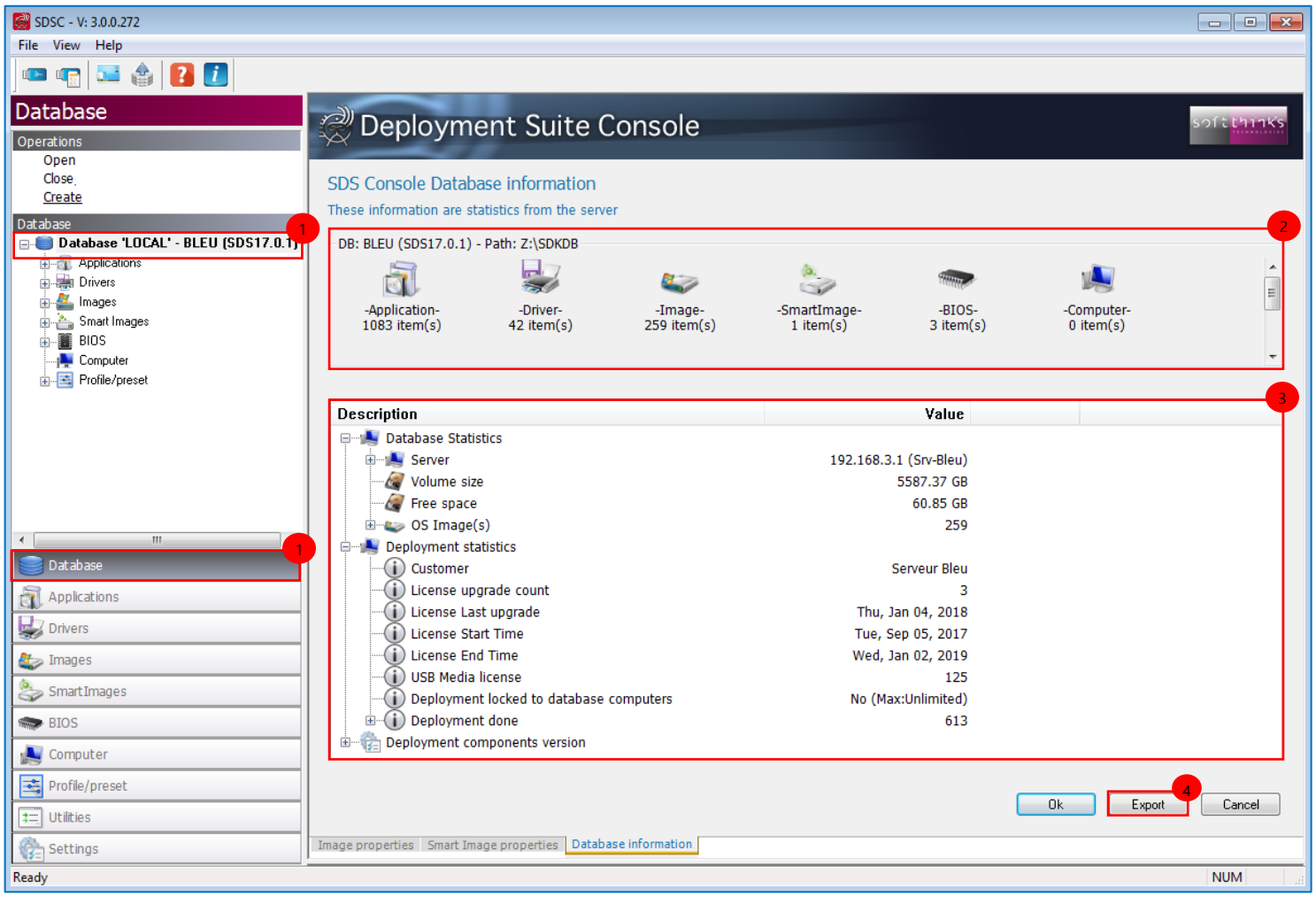
# Database

When you select "Database" (1) (from the tab or from the submenu tree-view), you will get its statistics, meaning how many applications, drivers, images, smart images, BIOS components, Computer, and profiles/presets are stored in the database (2), as well as other information about the server itself, the deployments made and the SDS application components versions (3) :




The « Export » button (4) allows you to export this information into an HTML or XML file.

**Hint** – SDS allows more than one database to be open during a session.

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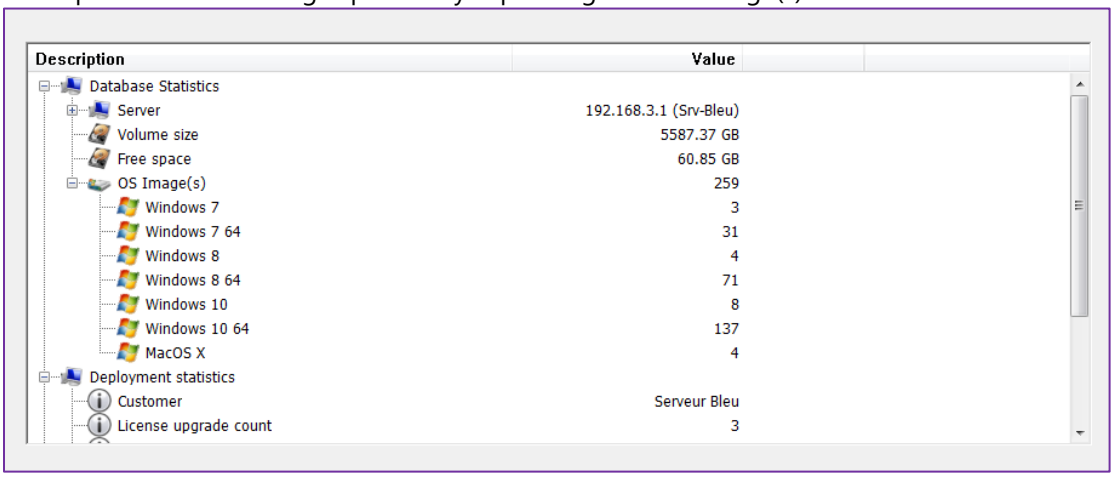
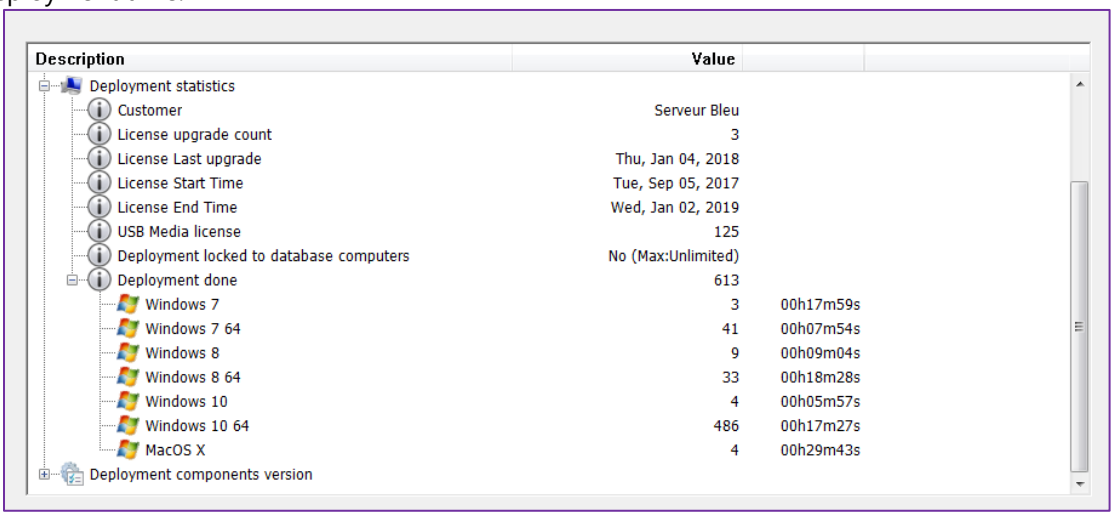
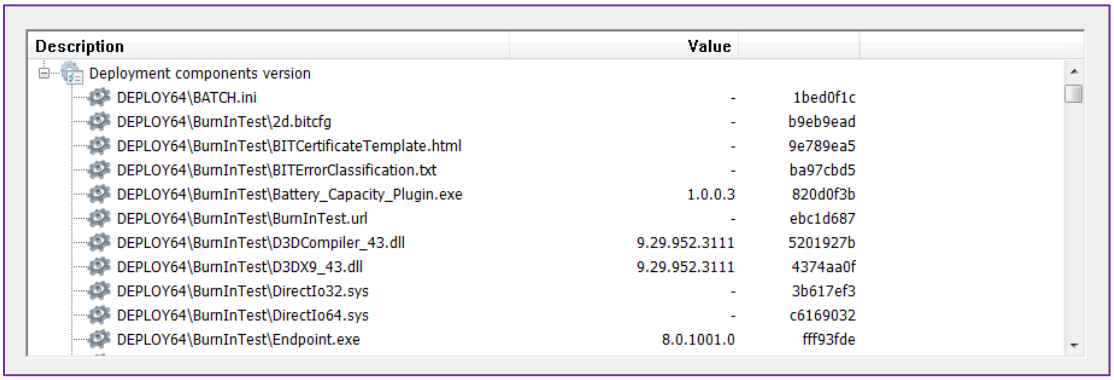
You can display the repartition of the images per OS by expanding the “OS Image(s)” node:




Scroll down to display all Deployment statistics which include License information and all the deployments done per OS with their average deployment time:




If you expand “Deployment components version”, you will obtain the list of all the components with their version number when applicable and their CRC:

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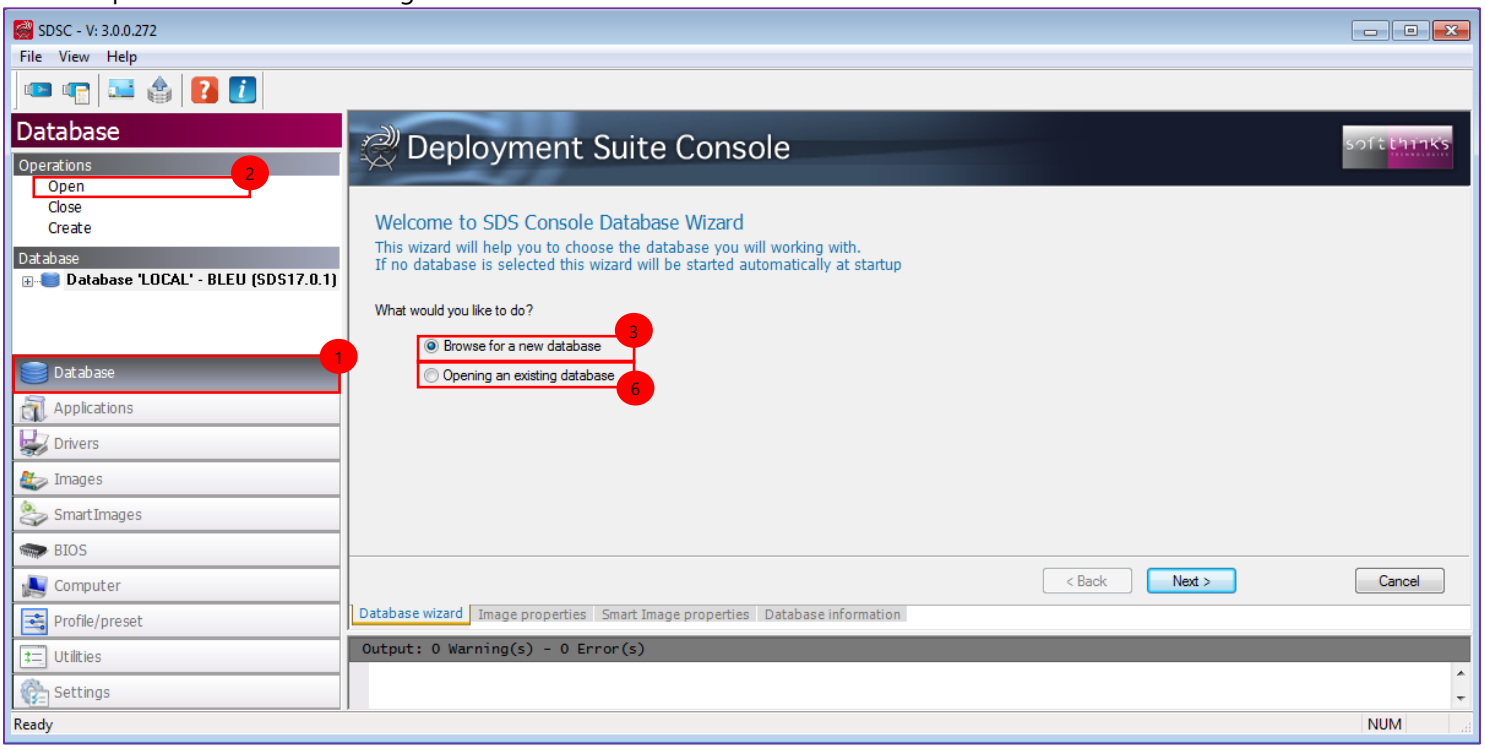
## Opening a database (“Open” operation)

After having installed and configured SDS, the first step will consist of opening the database created during the installation.

### Browse for a new database

1. Click on « Database » tab (1), then on the « Open » operation (2), and select the « Browse for a new database » option (3) before clicking on the « Next > » button:

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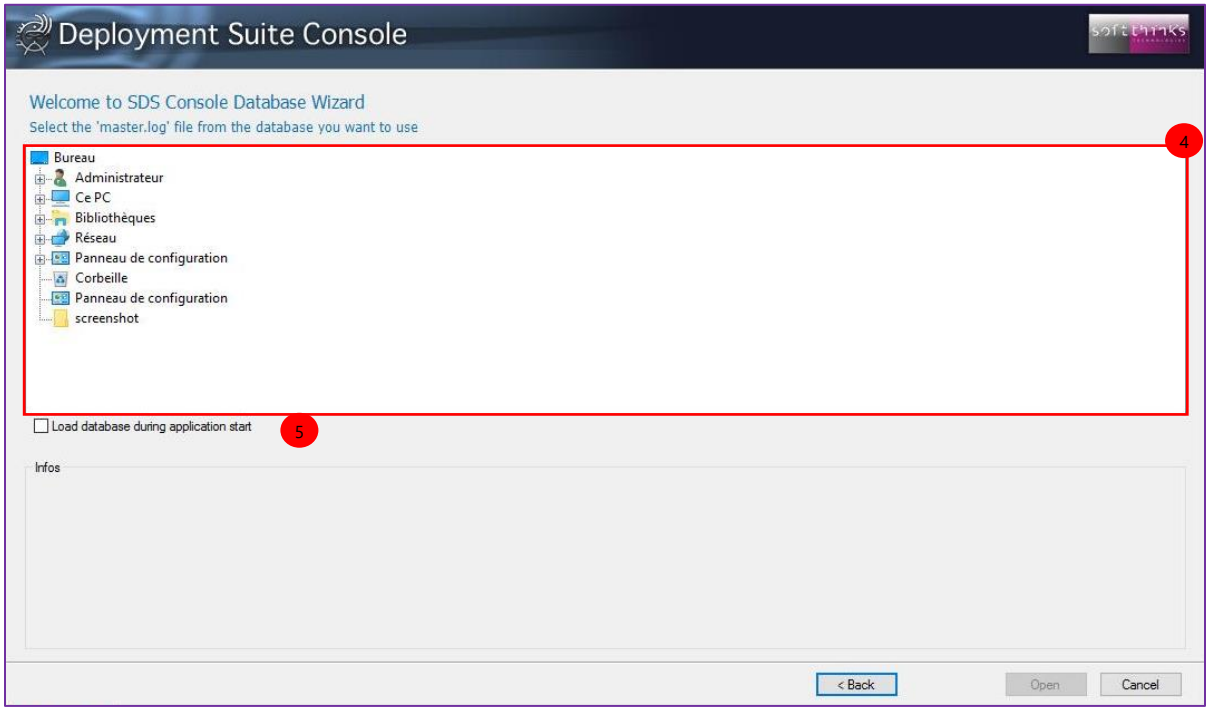
2. Browse for the MASTER.LOG file in the D:\REMOTEINSTALL\SDKDB installation folder in the tree-view (4) :




3. Check the « Load database during application start » option (5) to automatically open this database during the console startup, and then click on the « Open » button.

**Note:** Only databases that have not previously been opened by this installation of SDS should be opened with this option. Afterward, the location will be remembered in the history kept by SDS and will appear in the Open an Existing Database list.

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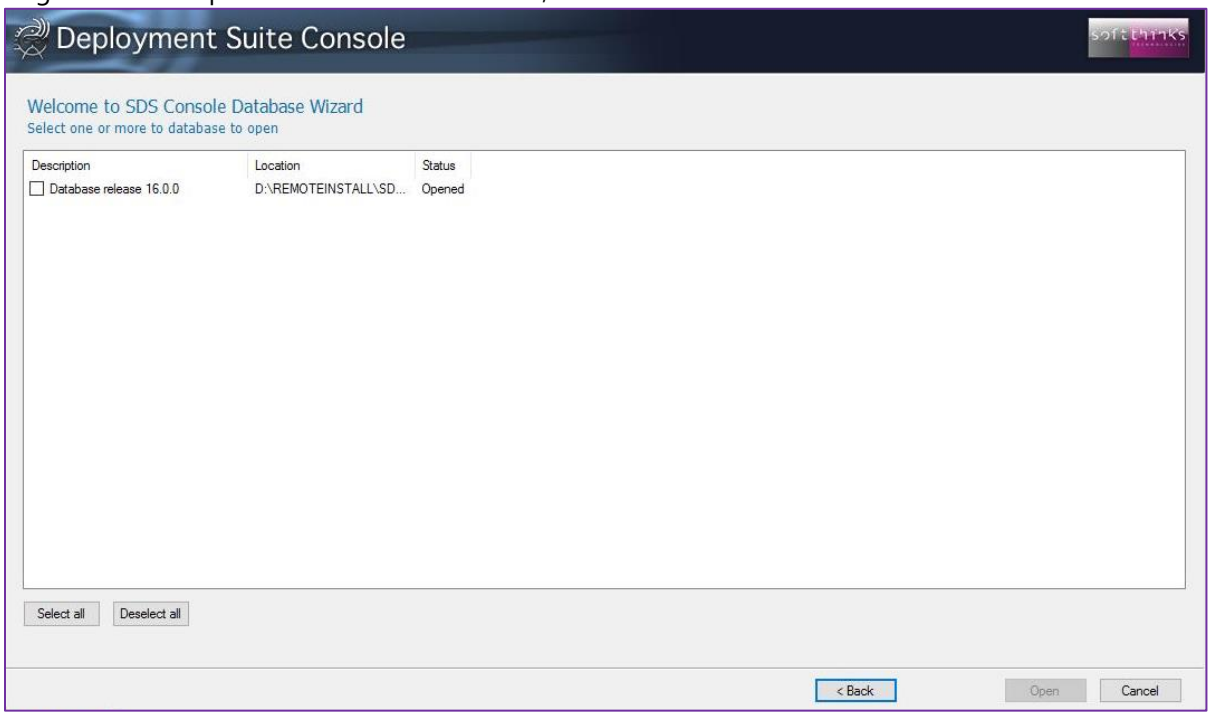
## Open an Existing Database

If you want to open a database that has been previously opened by this installation of SDS, use the "Opening an existing database » option 6 in the first screen, and select the database in the list shown:

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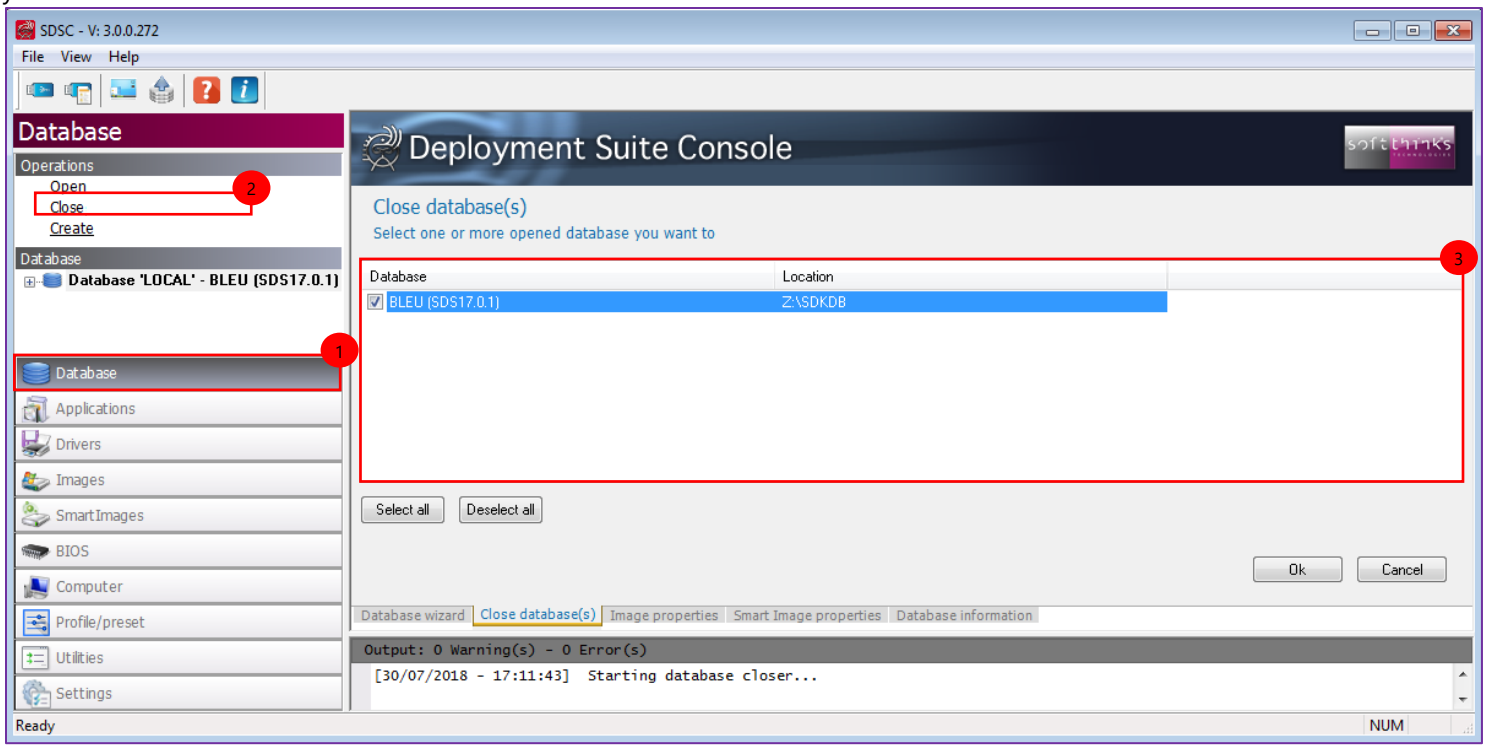
### Closing a database (“Close” operation):

In order to close a database, click on the “Database” tab (1), then on the “Close” operation (2), and select the database you wish to close (3):

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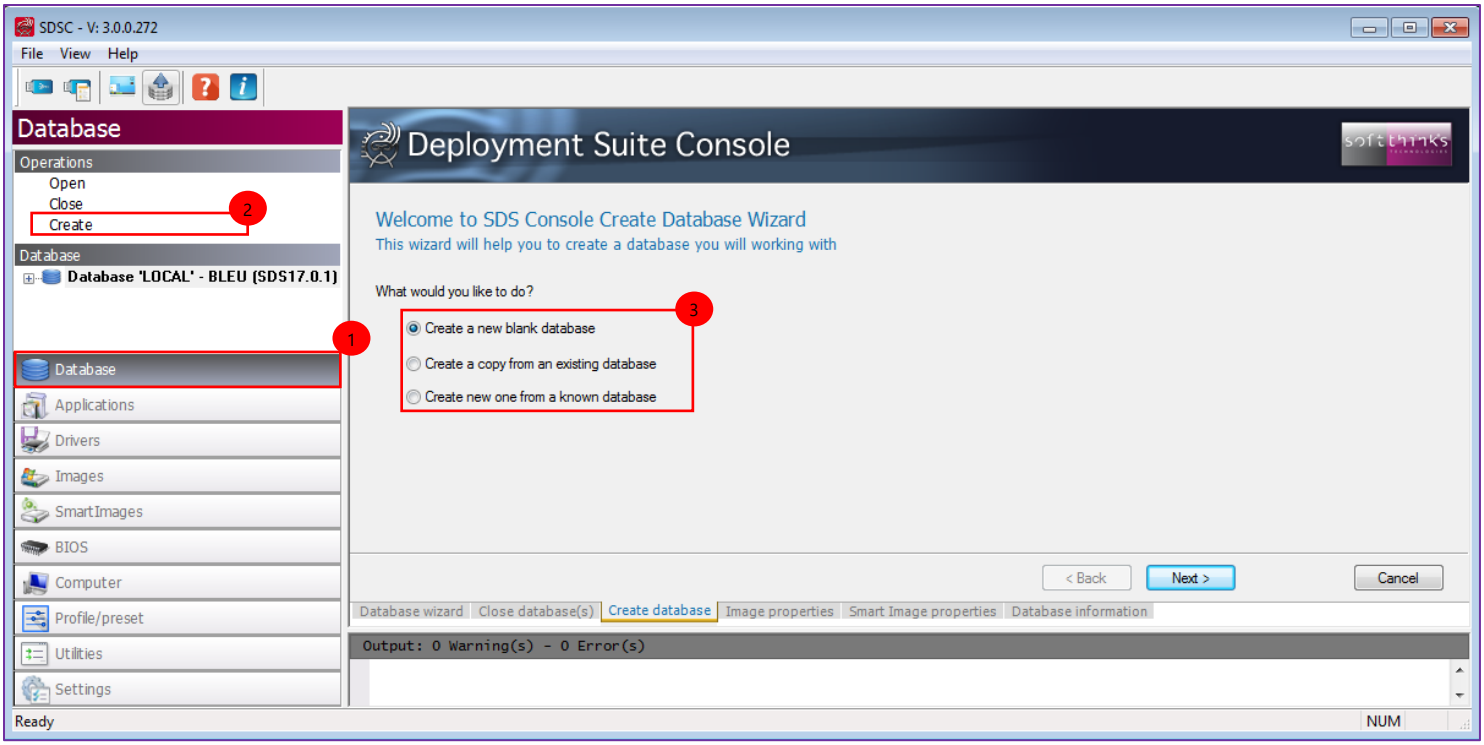
### Creating a database (“Create” operation):

To create a database, click on the « Database » tab (1), then on the « Create » operation (2), and select one of the options offered (3):




There are several ways to create a database for use with SDS:

- **Create a new blank database:** Only use this feature if you are starting completely fresh – there is no need to do this if you have converted a database from the previous release of SDS.
- **Create a copy from an existing database:** This allows the System Administrator to browse for an existing database and copy it to this instance of SDS.
- **Create new one from a known database:** This allows the System Administrator to make a copy of a database from an entry in the database history, and copy it as a new database to work with. This only works for databases which have previously been opened by SDS.

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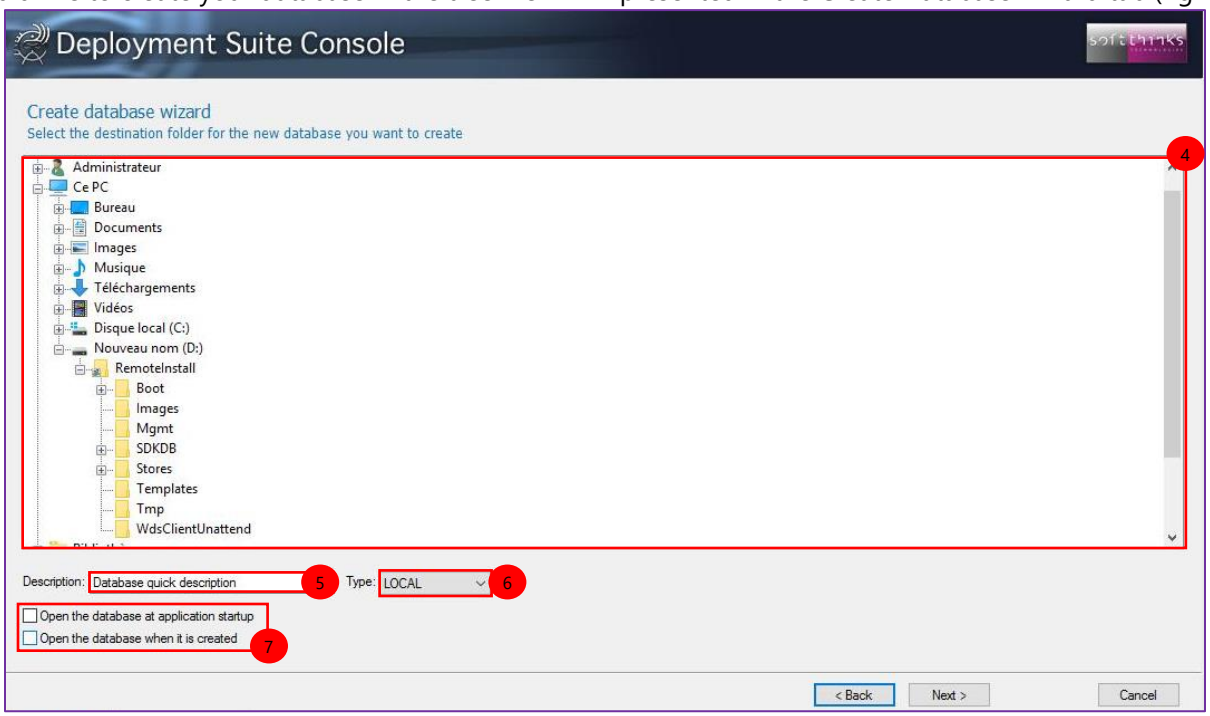
## Creating a blank database

1. After having selected “Create a new blank database” and clicked on “Next >”, select the “root location” where you would like to create your database in the tree-view (4) presented in the Create Database Wizard tab (right pane):




2. Specify a description (5) for the database in order to identify it.

3. Indicate the type of database (6). This can either be Local or Server.

4. Two options exist for how the database can be opened (7): during launch of the application or after creation of the database. The database will automatically be created in a subdirectory called SDKDB in the location you choose. For example, you can map a drive letter to a network share which will hold the database (in this example, X:) and SDS will create the necessary files and folder structures under X:\SDKDB.

**Hint** – Large databases take a long time to load. If you are pointing to a server database this may increase the load time due to network traffic and connection speed. It may be desirable to turn off the option “Open the database at application startup” in these situations.

5. When the database is created successfully, the new database will be shown (See Database screenshot) in the “Database” portion of the interface (left side, Database object view) when it is loaded.

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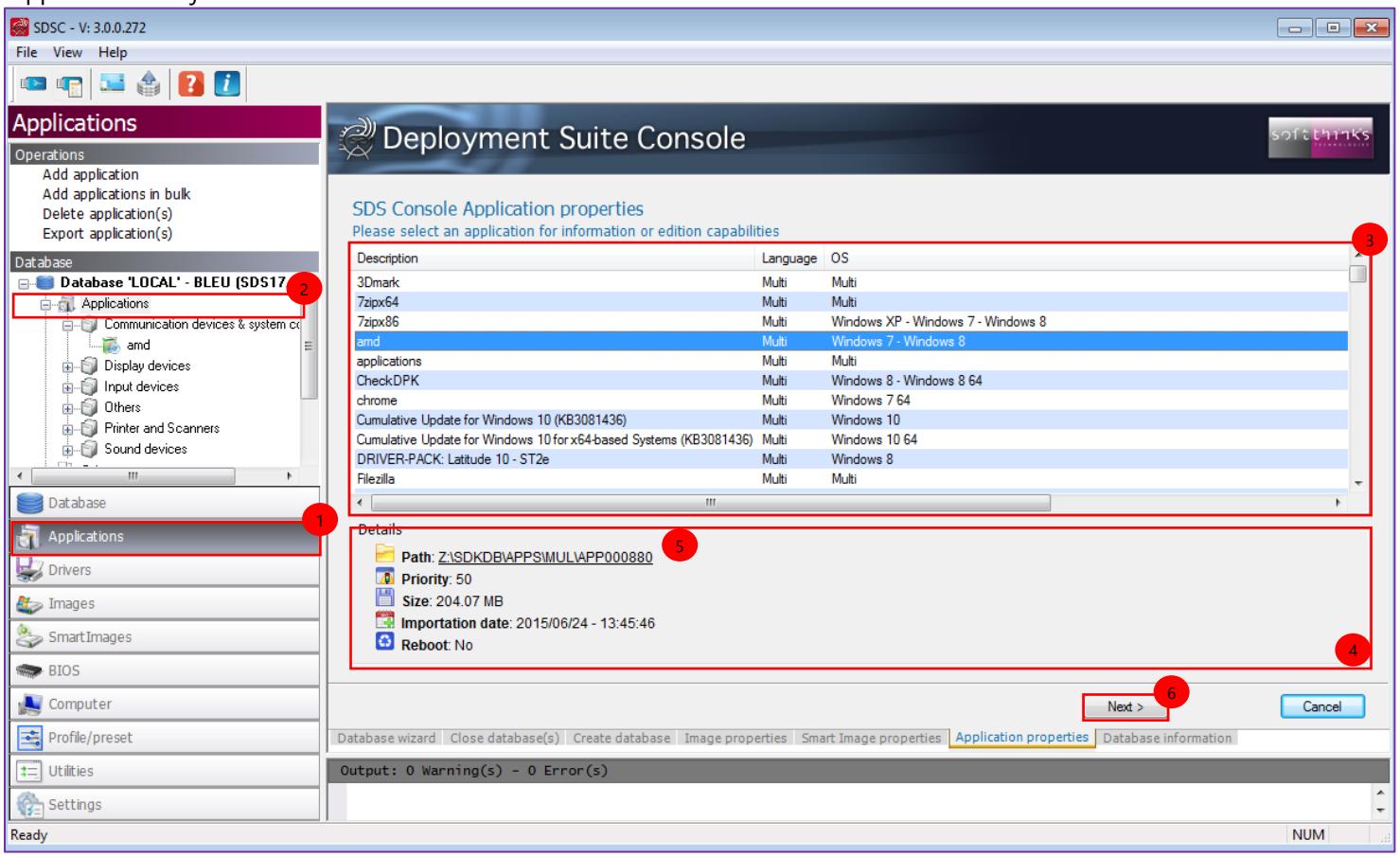
# Applications

You can explore the applications you have added or imported by clicking on the “Applications” tab 1, or directly on the “Applications” object in the tree-view 2 :




When you select an application in the list 3, you will see all of its details below 4, including its path that you can open by clicking on the link 5.

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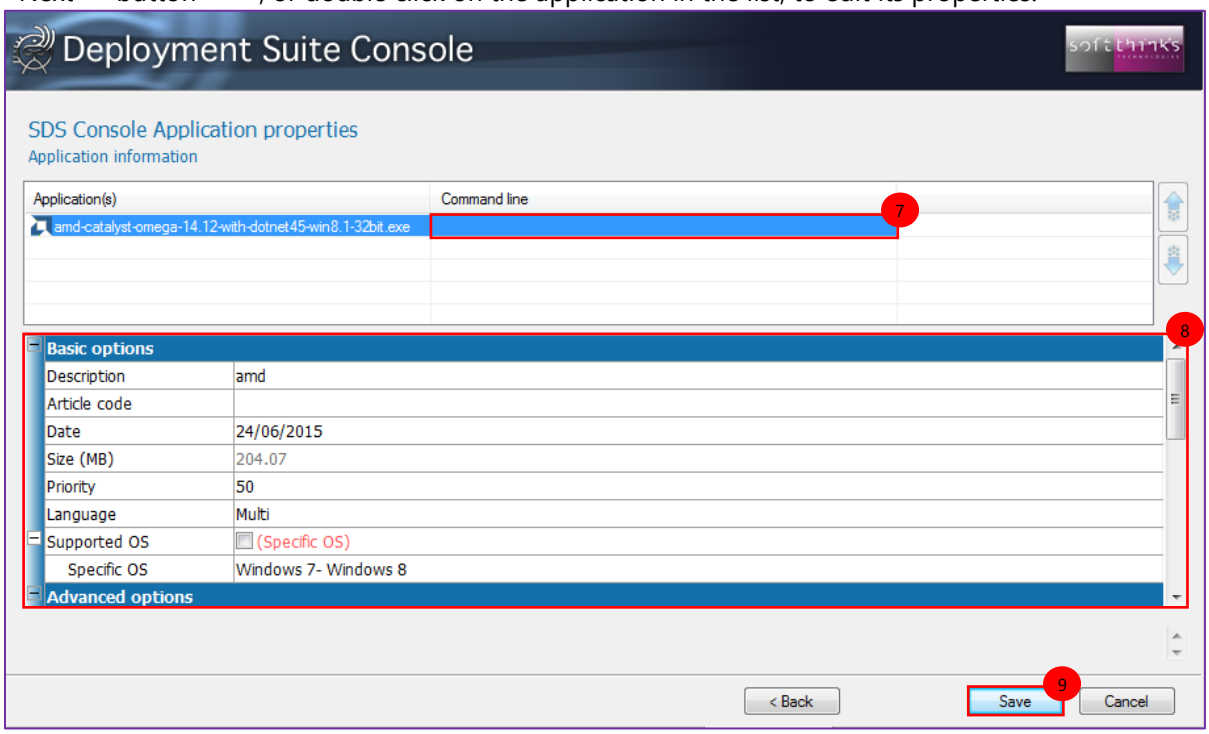
Click on the "Next >" button 6, or double click on the application in the list, to edit its properties:




- **Description:** Name of the selected application that you want to display during the applications selection (by default this is filled with the name of the folder containing the application). You can change this name to whatever you want.
- **Article code:** Unique identifier used to identify the application component / the part number used in the SPL file to designate the application. (This is not commonly used.)
- **Date:** Can be the date when the application is added into the database (so the current date by default) or the release date of the application.
- **Size:** Size of the application calculated from the file size.
- **Priority:** Allows you to install applications in a specific order (between 0 for the highest priority to 99 for the lowest one).
- **Language:** Language of the application ("Multi" to allow the application to be used for multiple languages, or else the name of the language supported).
- **Supported OS:** Either "Multi OS" (by default) to allow the application to work on all platforms, or else specific OS. When you uncheck "Multi OS", you can check all the OS supported in the dropdown list appearing in Specific OS line below:

**Note**: Make sure to uncheck Windows 7 if it is not going to be included as a supported OS as it is checked by default when you uncheck "Multi OS".

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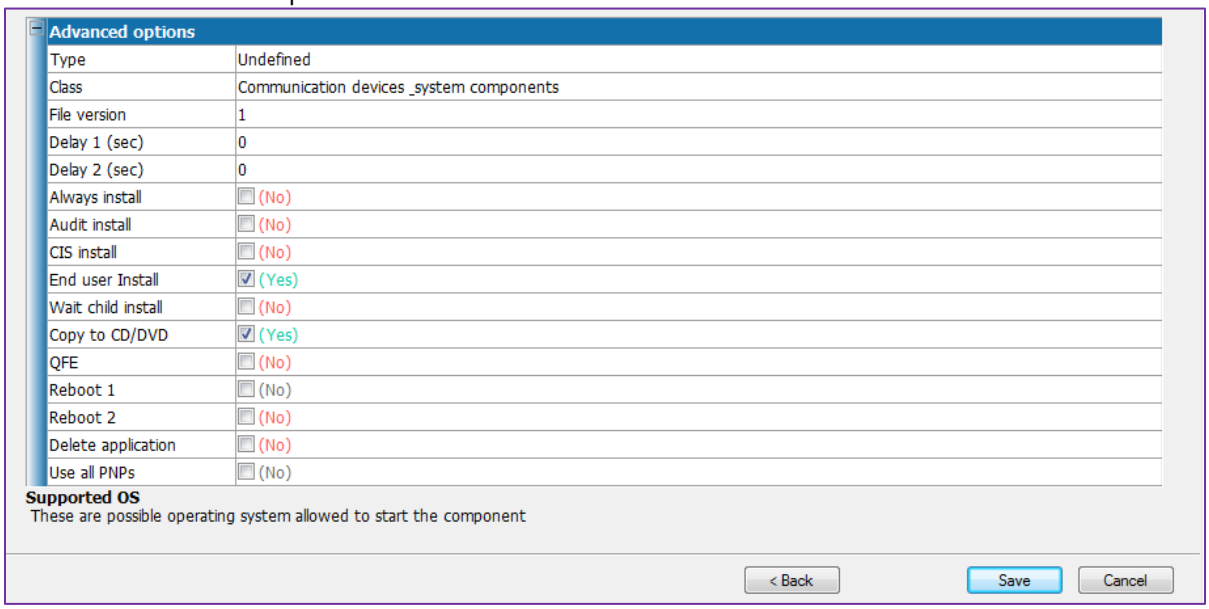
Scroll down to edit the "Advanced options":




- **Type:** Application package type (Undefined by default). Can be "Undefined", "Classic", "Driver", "Bundle", "Microsoft KB". The list of categories can be modified in Application settings.
- **Class:** Application class in which the application could be classified (Undefined by default). Can be "Undefined", "Communication devices & system components", "Input devices", "Printer and Scanners", "Display devices", "Sound devices", "Others". This list can be modified in Application settings.
- **File version:** Used to denote the version of the application package (1 by default)
- **Delay 1 (sec):** Delay in seconds before the application will execute (0 by default). This is useful for padding the application startup.
- **Delay 2 (sec):** Delay in seconds after executing the application and continuing to the next one (0 by default). This is useful for padding the application termination if some process are slow to complete after the application exits.
- **Always install:** Always install this application and automatically include in all downloads ("No" by default).
- **Audit install:** Turn on to install the application in audit mode otherwise it will be performed during mini-setup ("No" by default).
- **CIS install:** Application can be installed for Custom Image Solutions style images/downloads ("No" by default).
- **End user install:** Application is displayed in the Apps and Drivers Recovery interface ("Yes" by default).
- **Wait for child install:** Prevents ASEXEC from executing the parent process and proceeding if there are still child processes active. This is required for some installer engines that use child processes ("No" by default).
- **Copy to CD:** Copy the application to the Apps and Drivers Recovery CD. Choose this option if the application will be delivered to customer with original installation media ("Yes" by default).
- **QFE:** If the application being installed is a QuickFixEngineering application (aka Hotfix), use this option ("No" by default). This option adds 1000 added to the Priority value (normally 0-99) ensuring that QFEs are grouped at the very end of application installation order. All QFEs are installed in the same grouping ordered by priority after all standard applications have been installed.
- **Reboot 1:** Force a reboot after the application is installed by ASEXEC during factory installation or full system recovery ("No" by default)
- **Reboot 2:** Force a reboot after the application is installed using Apps and Drivers Recovery interface ("No" by default)
- **Delete applications:** Delete the application package once installed ("No" by default)
- **Use all PNPs:** Tie an application to hardware device(s) ("No" by default). If the specified hardware is not present, the application will not be installed.

Click on the "Save" button 9 to save your modifications.

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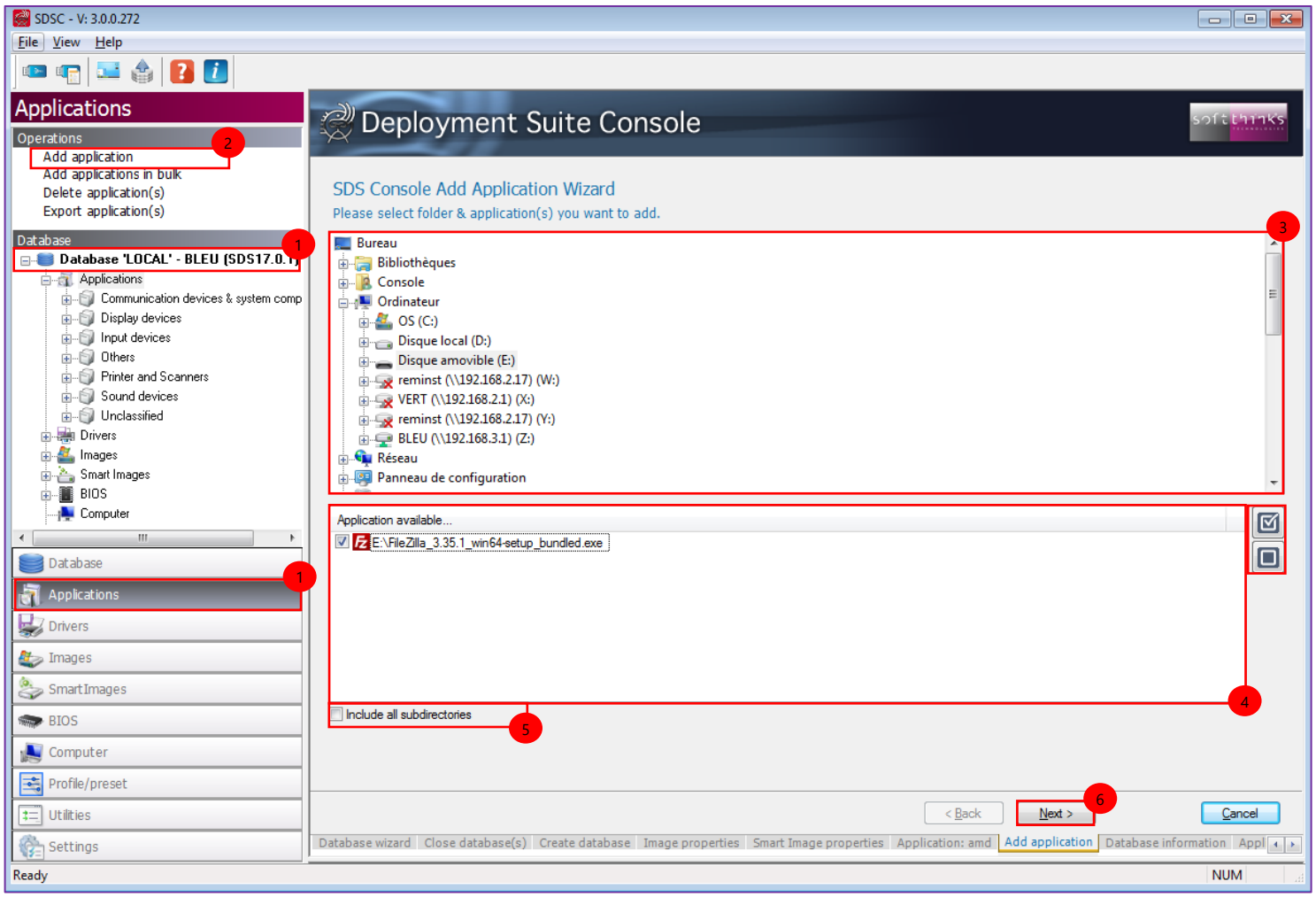
### Adding an application (“Add application” operation)

Adding an application into the SDS database allows you to selectively install it onto a system being deployed with SDS. **There should be only 1 application per folder.**

1. Click on « Applications » tab (1) or “Applications” object (1) in the Database tree-view
2. Click on « Add application » operation (2)
3. Select the folder containing the application to add in the browser (3)
4. Select the application installer (4) in the list. This list may contain several files, for example, if the application is a two-part install, there may be additional executables in the list which may be selected. You can select / unselect all elements thanks to the 2 buttons on the right of this list
5. Check the “Include all subdirectories” option (6) if there are subfolders inside your source folder that are required by the application
6. Click on the “Next >” button

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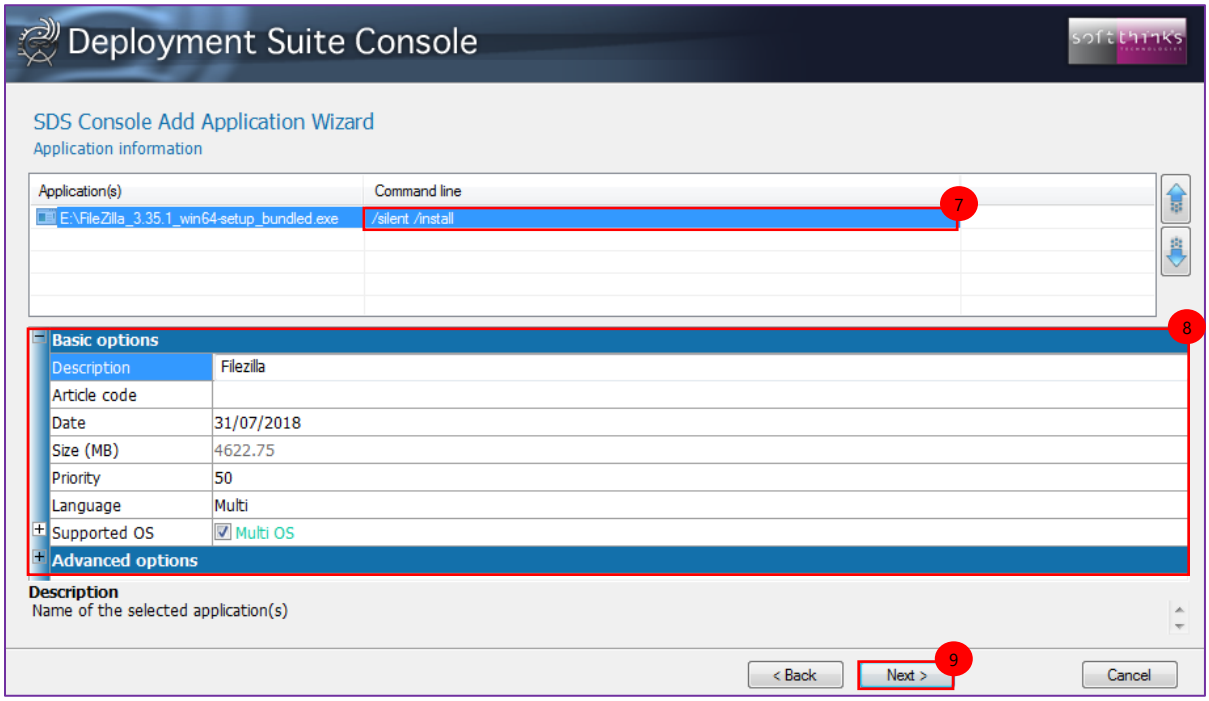
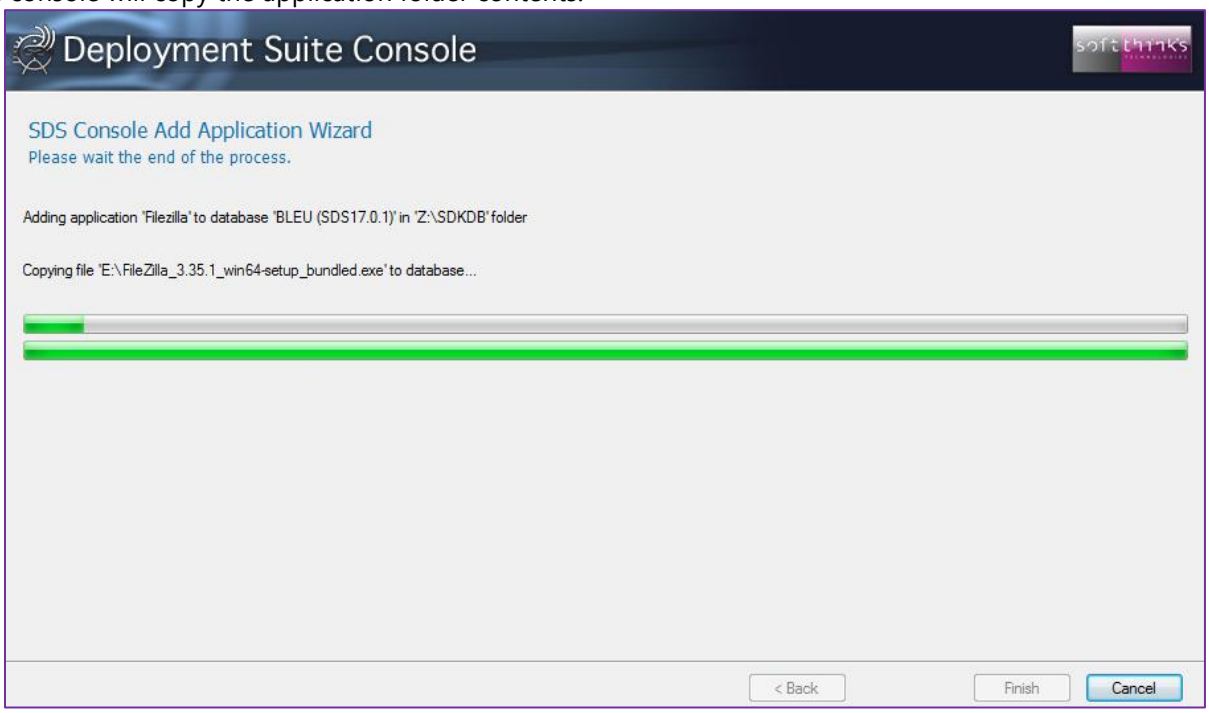
7. Specify the command line arguments to install your application silently (check the installation instructions and read-me files for the applications to find the application specific Silent Install switches) 7 and fill the other fields described previously 8 (for each of them you have a description at the bottom) before clicking on the "Next >" button 9 :




8. The console will copy the application folder contents:

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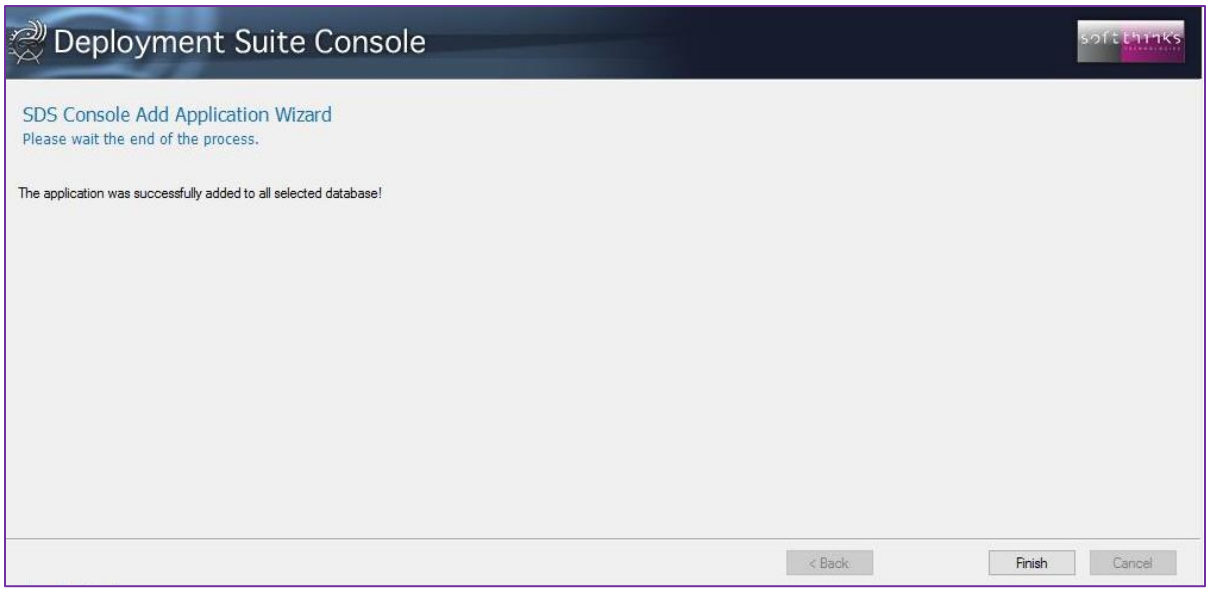
9. A message will indicate you that the application has successfully been added to the database at the end of the process:




SDS allows to copy bundles to the system with deployment through a profile according to computer PNPs. When a profile with bundles is used, if the driver PNP detection is switched off, the bundle will be forced to be copied according to the profile. This will also allow using a same profile and choosing if the bundle must be downloaded or not.
New setting added to selector.ini (profile) in the [Bundle] section to allow forcing PNP bundle detection:

```
[Bundle]
NoPNPOverSel=0 -> let bundle detection occurring to copy only matching bundle
NoPNPOverSel=1 -> block PNP detection and force bundle section to be copied to the User Partition
```

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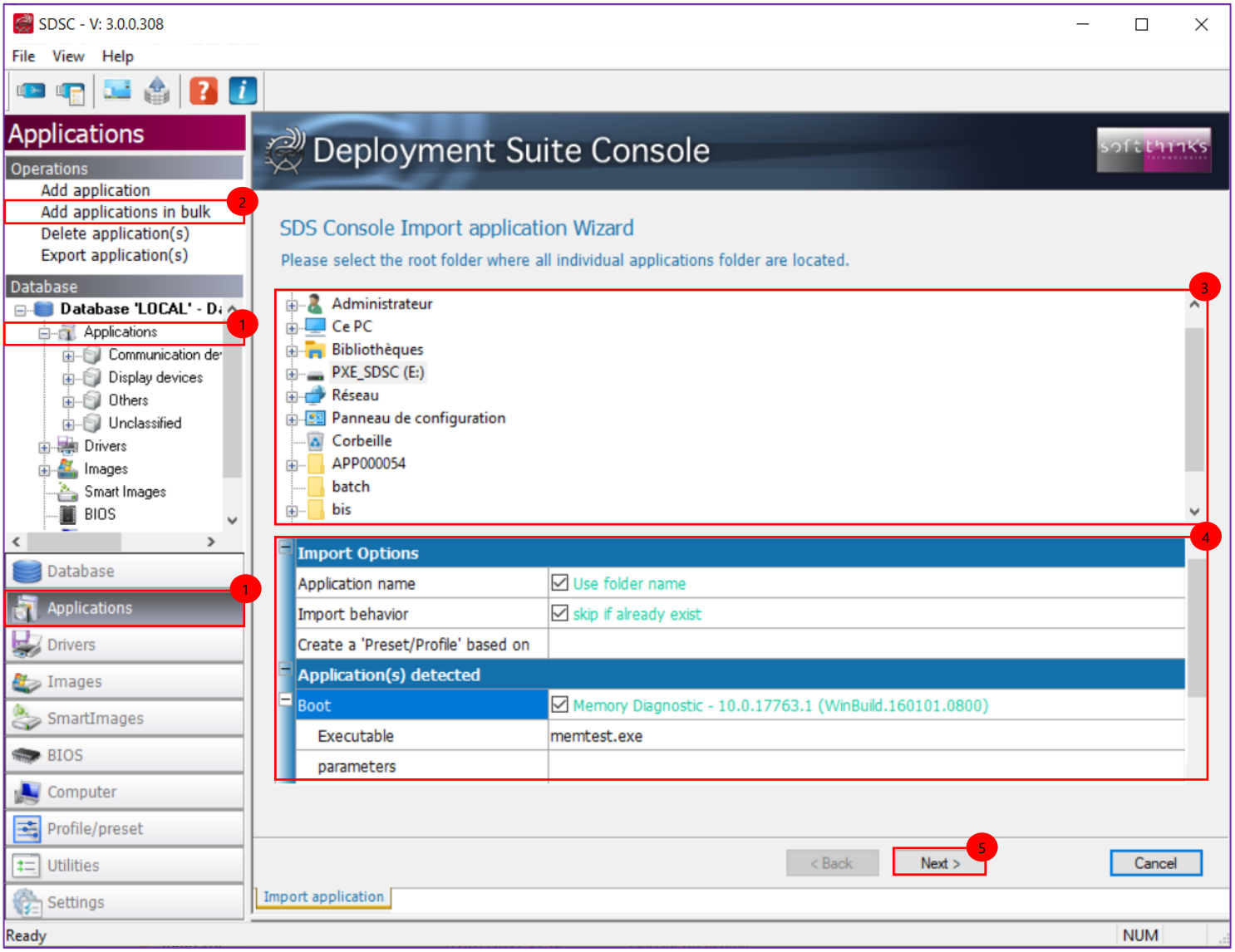
## Adding several applications (“Add applications in bulk” operation)

You can also add all of the drivers in at one time.

1. Click on “Applications” tab or “Applications” item in the database tree-view (1)
2. Click on the “Add applications in bulk” operation (2)
3. Select the root folder where all individual applications folders are located (3)
4. Specify the import options (4)
5. Click on the “Next >” button (5)




6. The wizard informs you once all the driver files have been copied into SDS Database

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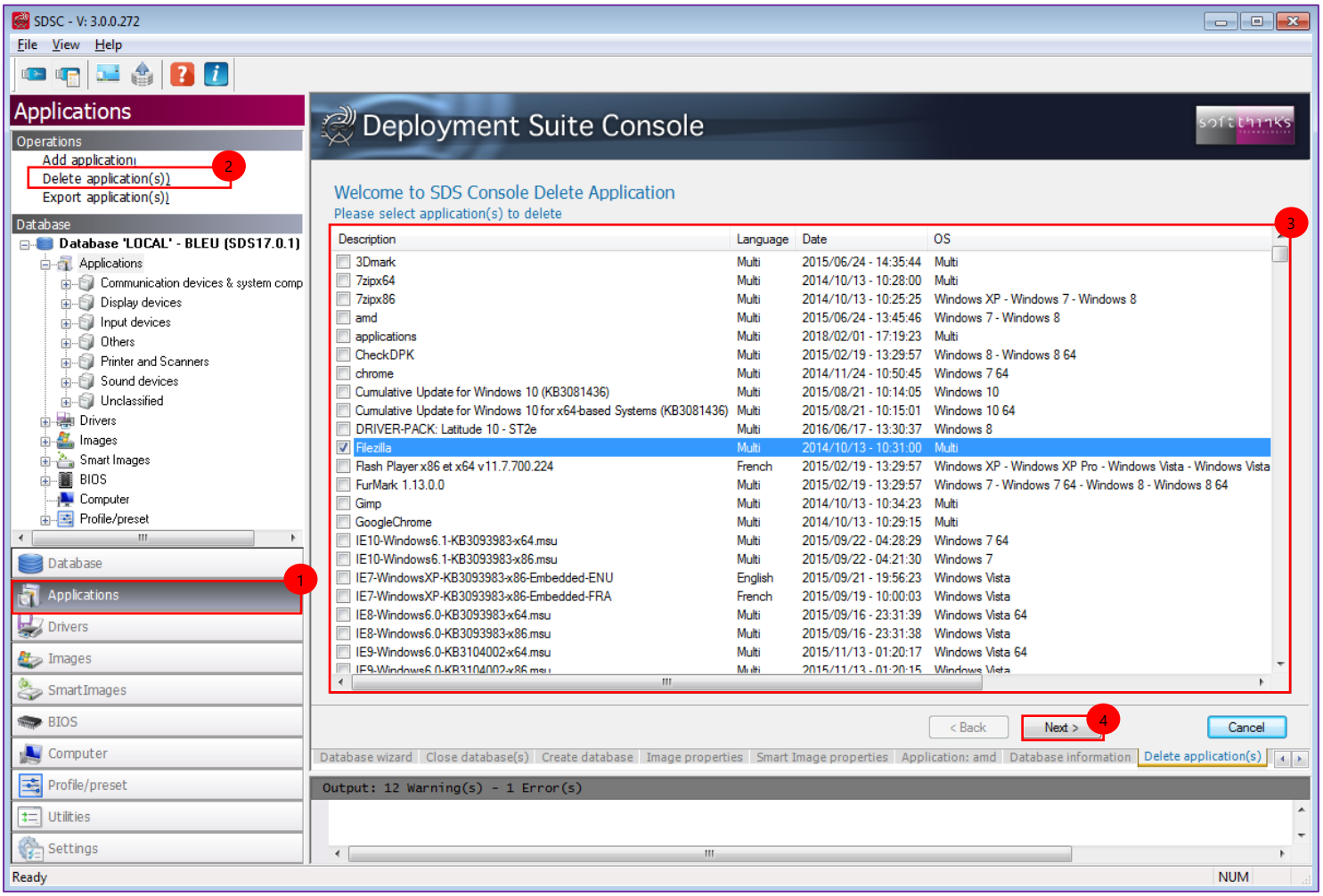
## Deleting application(s) (“Delete application(s)” operation)

In order to delete one or more applications,

1. Click on “Applications” tab (1)
2. Click on “Delete application(s)” operation (2)
3. Select the application(s) you want to remove from the database in the list on the right (3). If you don’t see an application recently added, press F5 to refresh the list contents.
4. Click on the “Next >” button (4)




5. The wizard will confirm you that your applications have been deleted once the process has completed.

**Note**: Deletion is permanent. There is no method to undo a delete. Be careful when selecting applications for deletion and review them before continuing.

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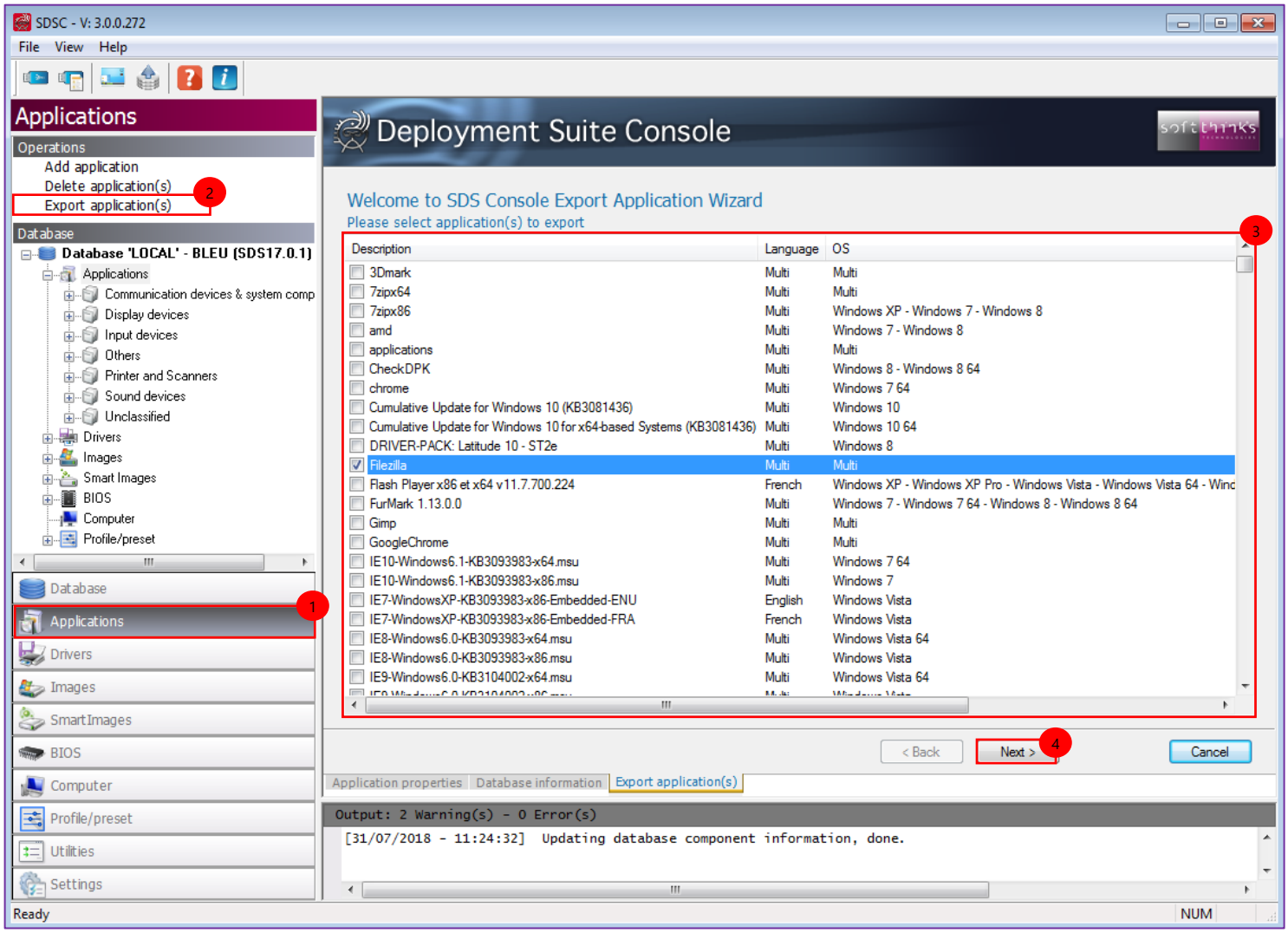
## Exporting applications (“Export application(s)” operation)

In order to copy applications from the current server database to another server database, you have the ability to export applications.
If you need to copy applications to another database on the same server we strongly recommend you use drag & drop between the 2 databases you have opened.

1. Click on “Applications” tab (1)
2. Click on “Export application(s)” operation (2)
3. Select the applications you want to export from the list (3). If you don’t see an application recently added, press F5 to refresh the list contents.
4. Click on the “Next >” button (4)

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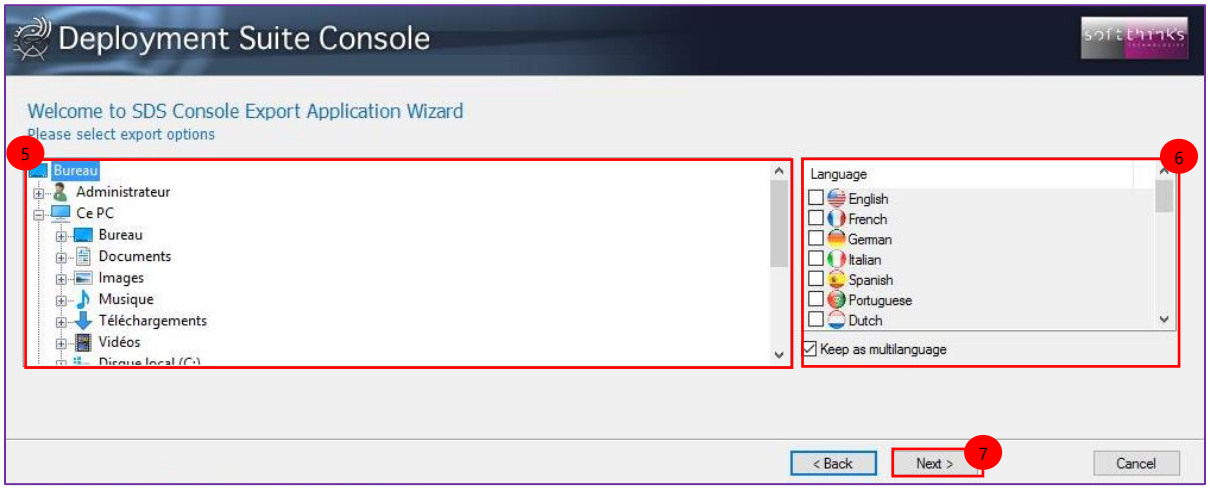
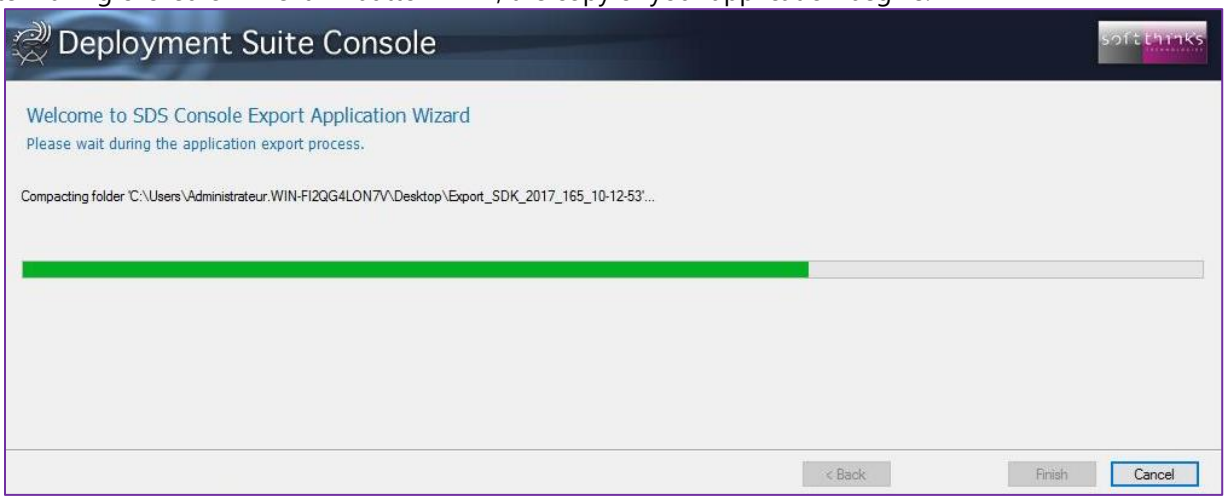
5. Specify the target folder (5) where the selected application will have to be exported in a ZIP file

6. Specify the language (6) or check the option “Keep it as Multilanguage”




**Note:** Please note that in order to avoid corruption during copy USB keys are not allowed as a target and don’t appear in the tree-view.

7. After having clicked on “Next >” button (7), the copy of your application begins:




8. The wizard alerts you when the copy is completed

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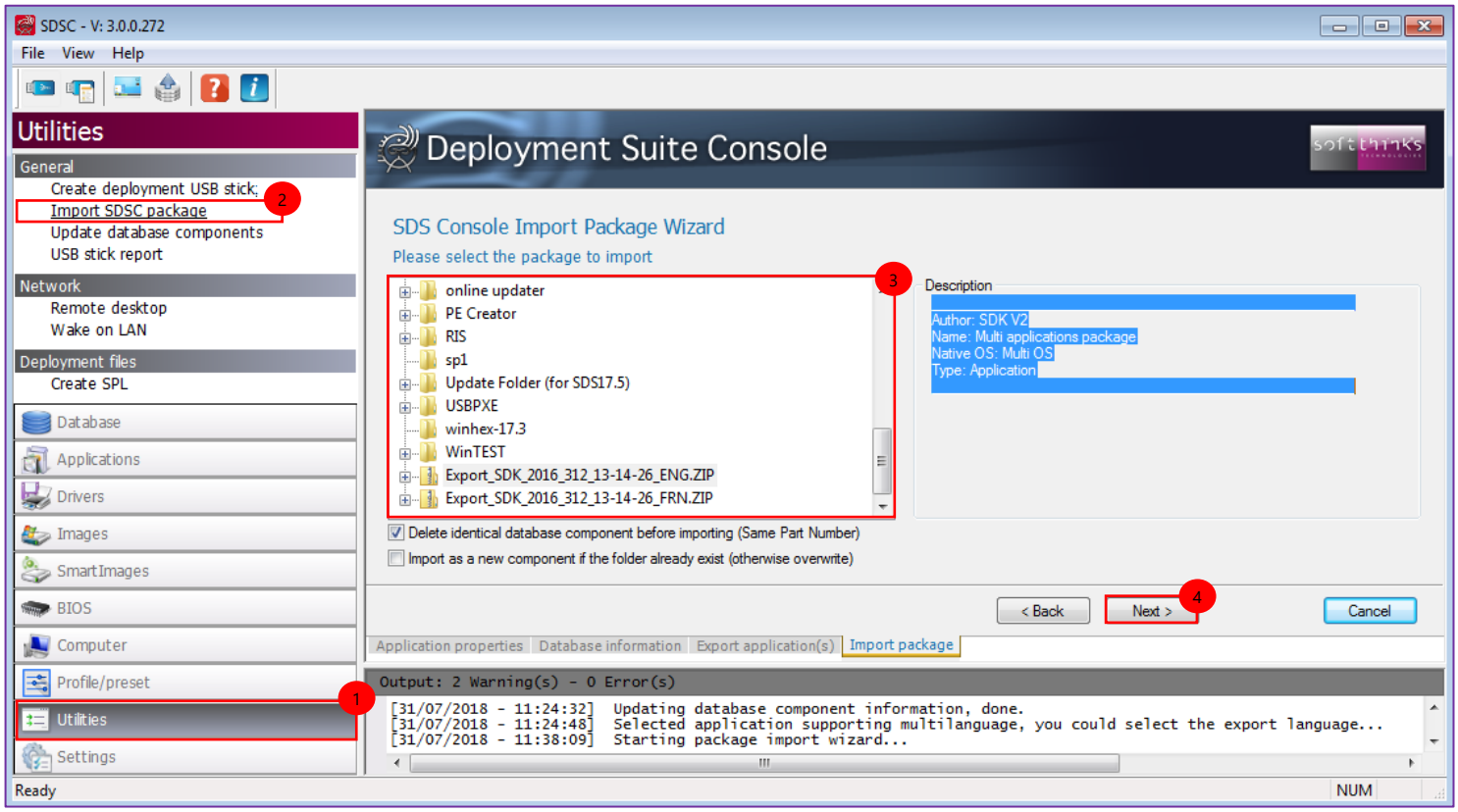
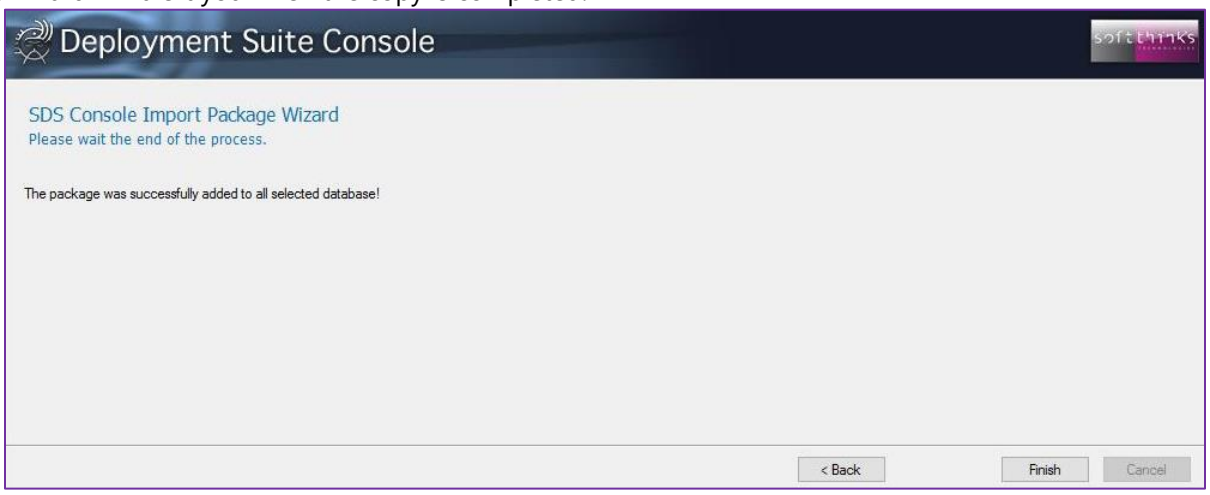
### Importing application(s) (“Utilities\Import SDSC Package”)

To import an application package that was previously created,

1. Click on « Utilities » tab 1
2. Click on « Import SDSC Package » operation 2
3. Select the application package you want to import 3
4. Click on the “Next >” button 4




5. The wizard will alert you when the copy is completed:

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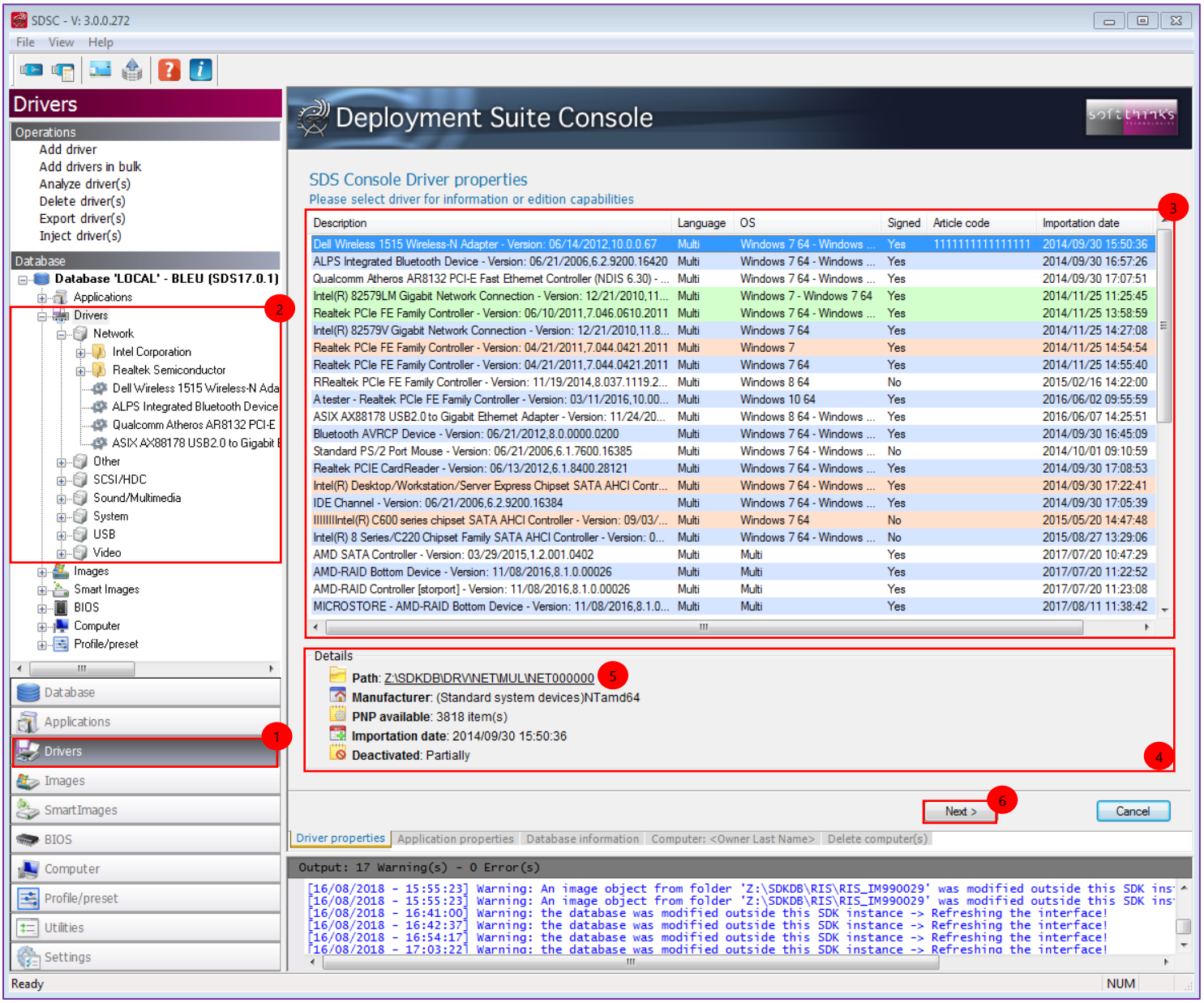
# Drivers

In the same way as for Applications, you can explore the drivers you have added or imported by clicking on the “Drivers” tab 1, or directly on the “Drivers” object in the tree-view 2 :




When you select a driver in the list 3, you will see all of its details below 4, including its path that you can open by clicking on the link 5.

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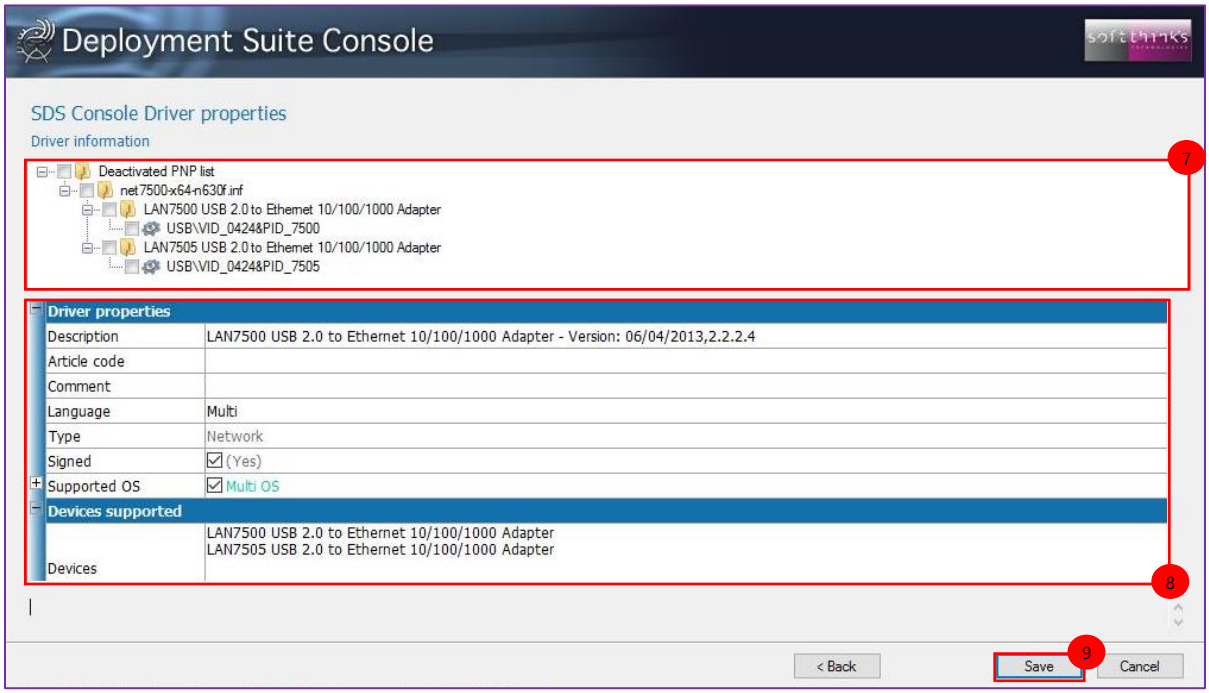
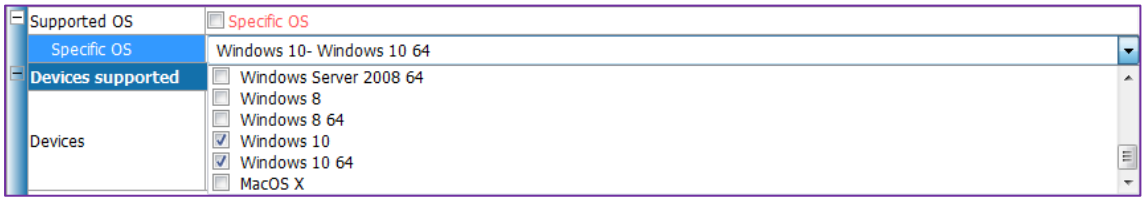
Click on the “Next >” button 6, or double click on the driver in the list, to eventually uncheck some PNPs 7 in order to avoid the download of this driver during deployment in automatic mode, and edit its properties 8:




- **Description:** A text description of the driver that will be displayed in the database and by the Apps and Drivers Recovery interface. You can modify this as needed.
- **Article Code:** The part number used in SPL files to designate the driver (Not commonly used). This code should be unique regarding the database items in order to identify this component.
- **Comment:** Additional field to provide info on the driver.
- **Language:** Language supported by the driver. Select “Multi” for multilanguage driver.
- **Type:** The class of the driver (mass storage, network, video, etc) from a list created in the Settings tool.
- **Signed:** Check this box if the driver is digitally signed. Note: If the driver is not already signed, checking this box will not sign it.
- **Supported OS:** Select “Multi OS” to allow the driver to be used with any OS, or else “Specific OS” and check the OS supported in the drop-down list below:




- **Devices Supported:** Shows the description of the devices from the INF file.

Click on the “Save” button 9 to save your modifications.

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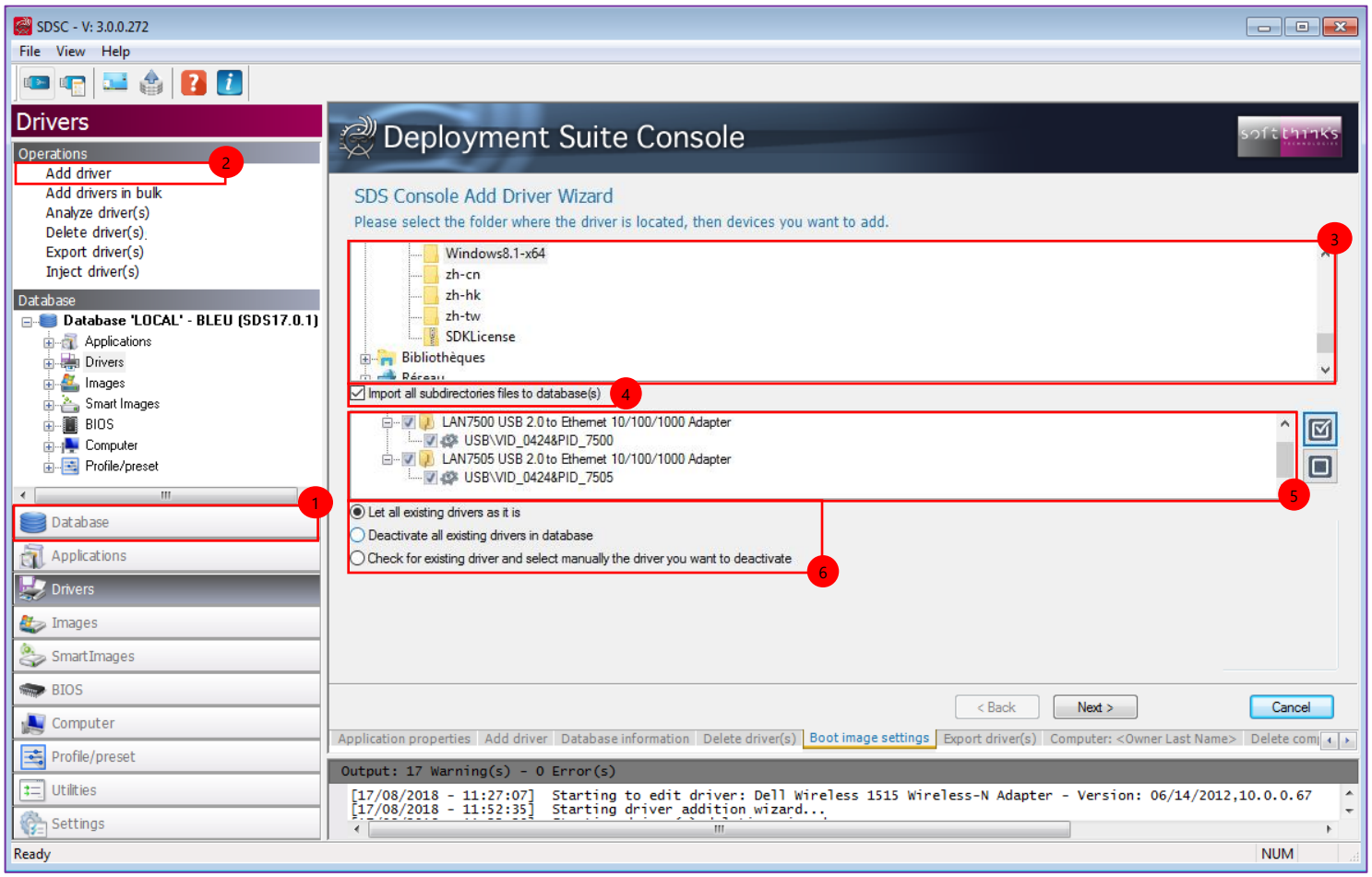
## Adding a driver (“Add driver” operation)

To add a driver to the database, for example a network driver required to boot on a specific platform, you first need a folder containing the driver INF, CAT and other associated files for the driver. If the driver is packaged in a compressed format, it must be expanded first.
If you need to add several drivers at a one time, you should use the operation “Add drivers in bulk” instead.

1. Click on the “Drivers” tab or the “Drivers” item in the Database tree-view (1)
2. Click on the “Add driver” operation (2)




3. Select the folder where the driver you want to add is located (3)
4. Check the option “Include Subdirectories” (4) if the source folder contains subdirectories that are required to install the driver properly. Some vendors create their driver packages with the INF file in the root directory and binaries under a subfolder based on the compatible OS name of the driver.
5. Select the individual PnP IDs to associate to the driver (or the topmost value to include all of the IDs) (5)
6. Choose what you want to do with existing drivers matching the selected PnP IDs (6) :
   - **Let all existing drivers as it is:** This option adds this driver and keeps any existing drivers using the same PnPIDs.

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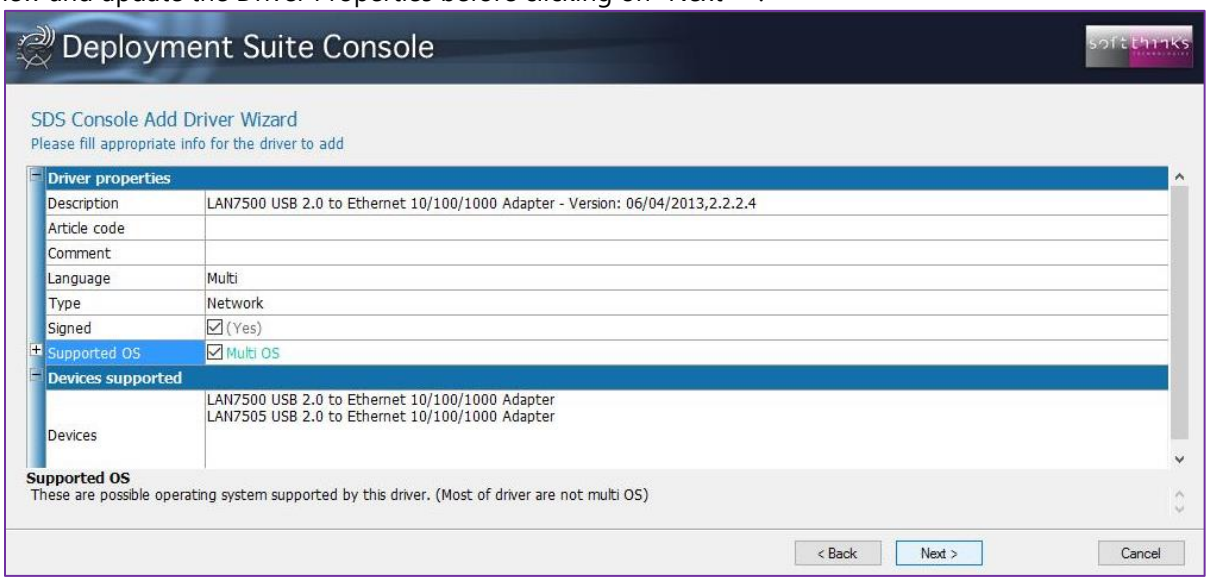
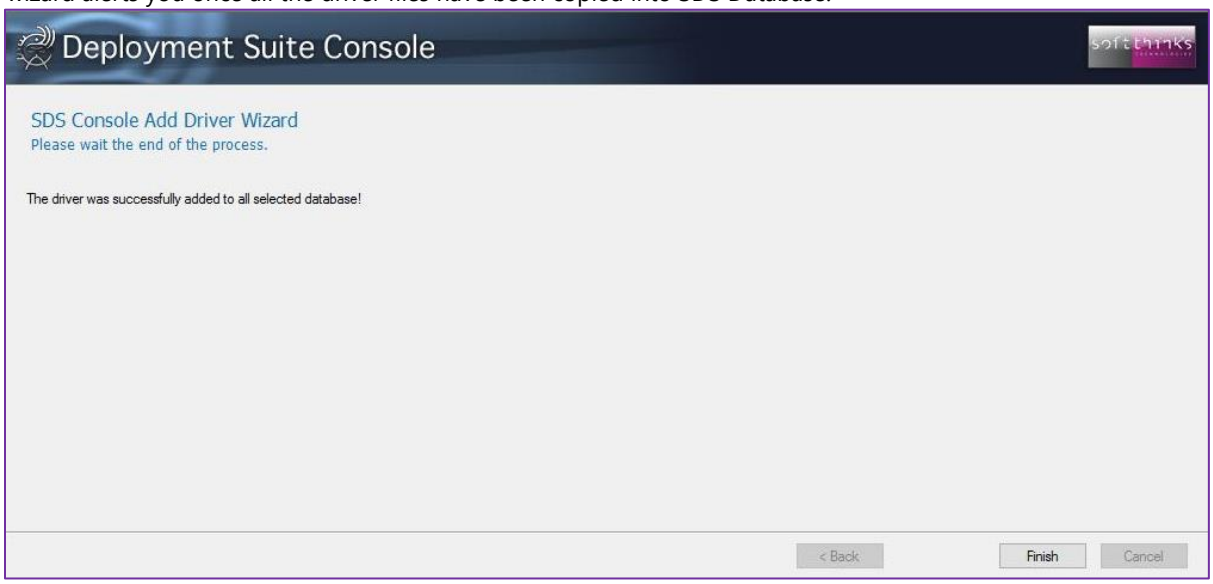
- **Deactivate all existing drivers in database:** The new driver supersedes the existing drivers with the same PnP IDs.
- **Check for existing driver and manually select the driver you want to deactivate**: This option allows the Administrator to selectively replace the driver on a PnP ID basis.

7. Review and update the Driver Properties before clicking on "Next >":




8. The wizard alerts you once all the driver files have been copied into SDS Database:

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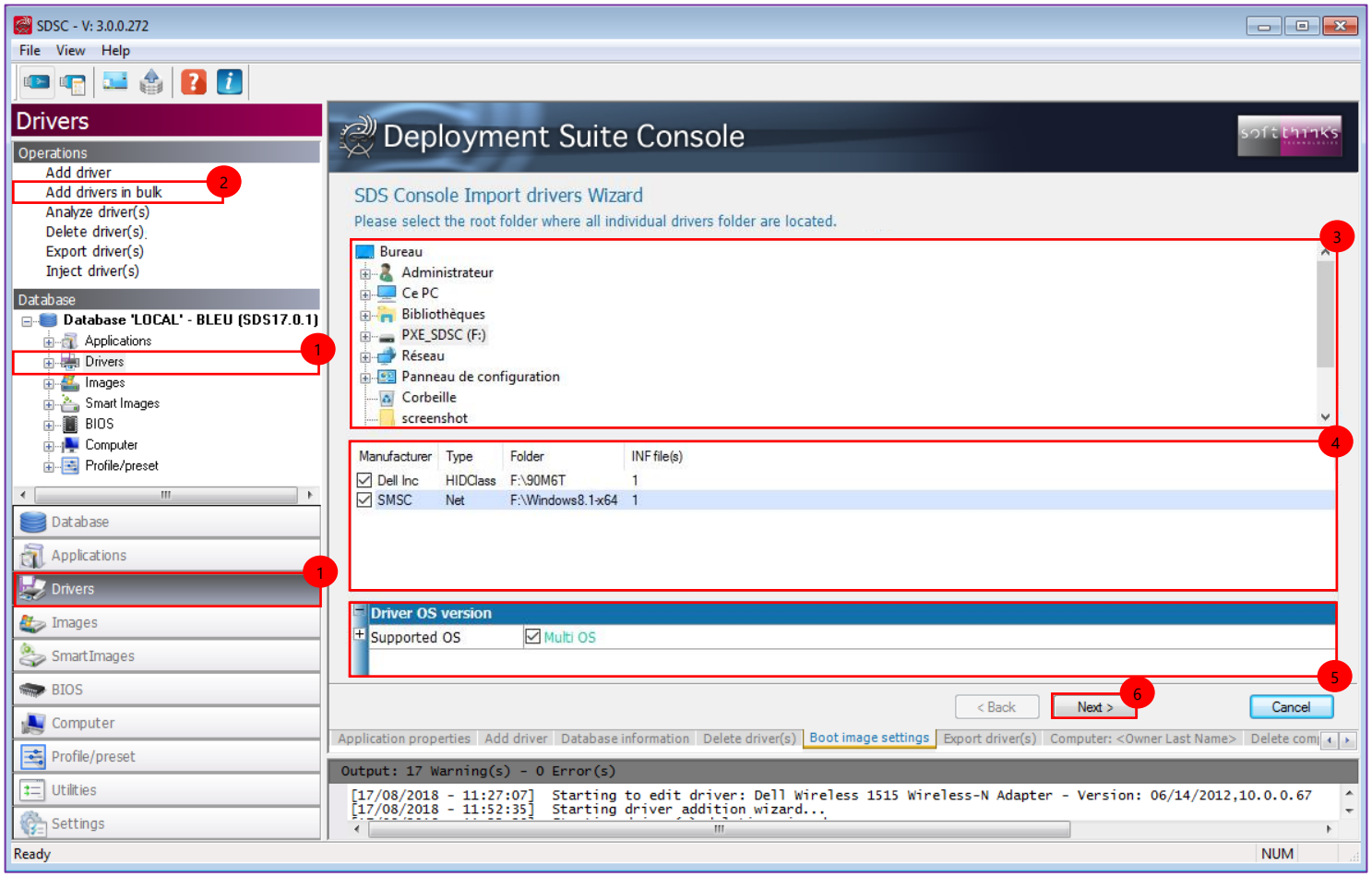
### Adding several drivers (“Add drivers in bulk” operation)

You can also add all of the drivers in at one time.

7. Click on “Drivers” tab or “Drivers” item in the database tree-view (1)
8. Click on the “Add drivers in bulk” operation (2)
9. Select the root folder where all individual drivers folders are located (3)
10. Select which ones you want to import (4)
11. Specify the driver OS version (5)
12. Click on the “Next >” button (6)




13. The wizard alerts you once all the driver files have been copied into SDS Database

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## Adding Driver Packs

Driver packs are recent addition to our software that will deploy a small database of drivers that matches the model of the unit. This will prevent any driver version mismatch issues.

Driver packs are setup as special application in the system. During the deployment process, once the system reaches the point of doing driver injection, it will check to see if there is a driver pack that matches the model. If there is, it will use the driver pack rather than the normal driver database.

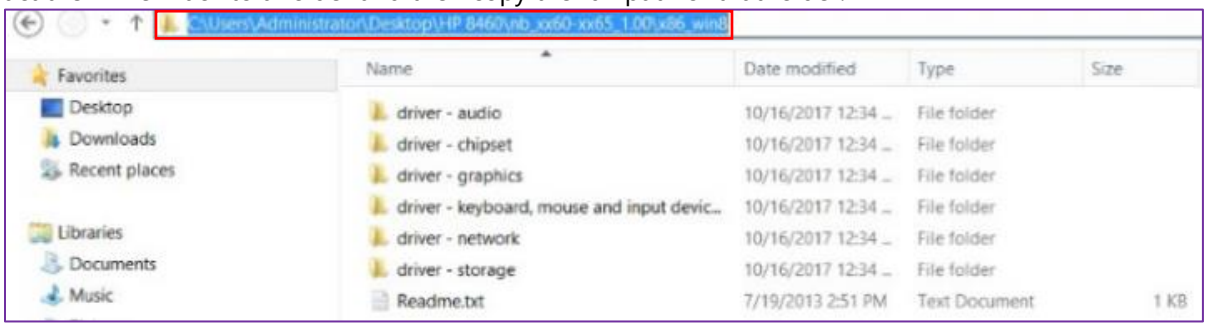
Certain Manufacturers provide driver packs for their computers. Dell, HP and Lenovo do for sure and these can be reached by clicking on the following links:

- **Dell** : http://en.community.dell.com/techcenter/enterprise-client/w/wiki/2065.dell-command-deploy-driver-packs-for-enterprise-client-os-deployment
- **HP** : http://ftp.hp.com/pub/caps-softpaq/cmit/HP_Driverpack_Matrix_x86.html (32 Bit)
  http://ftp.hp.com/pub/caps-softpaq/cmit/HP_Driverpack_Matrix_x64.html (64 Bit)
- **Lenovo** : https://support.lenovo.com/us/en/documents/ht074984

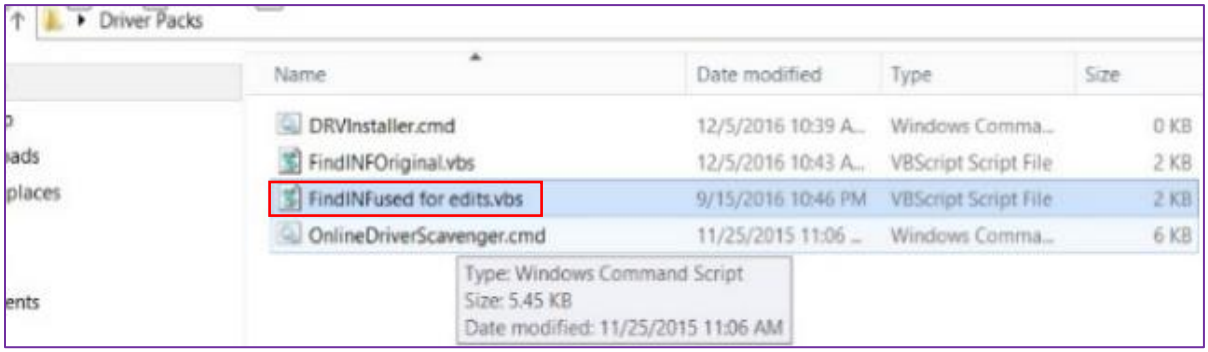
Here are the steps to add driver packs to the SDS database:

1. Find the model of computer that you are looking for and download that driver to a folder on your server.

2. Extract the Driver Pack to a folder and then copy the full path of that folder:




3. You will be given a driver pack folder with files that are needed for creating driver packs. Open that folder and right click on FindINFused for edits.vbs and select EDIT:

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4. Paste the address that you copied for the Extracted Driver Pack Folder into the First line of FindINFused for edits.vbs that says Const startDir = "...:

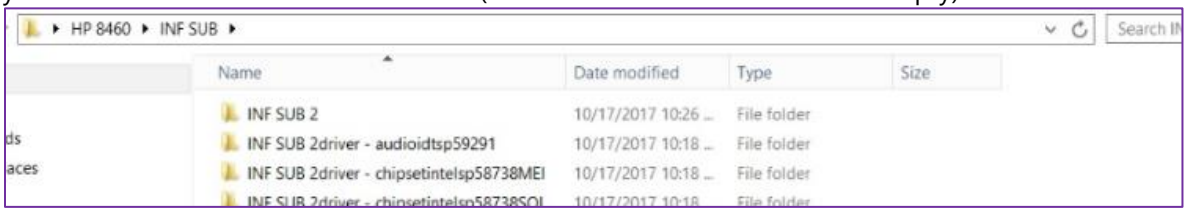
```
Const startDir = "C:\Users\Administrator\Desktop\HP 8460\nb_xx60-xx65_1.00\x86_win8"
Const endDir = ""
Set oFSO   = CreateObject("Scripting.FileSystemObject")
```

5. In the folder that you extracted your Driver Pack, create a folder called INF SUB and then inside there, create a folder called INF SUB 2. Then copy the path of INF SUB 2 and paste it into the Second line of FindINFused for edits.vbs that says Const endDir ="...:

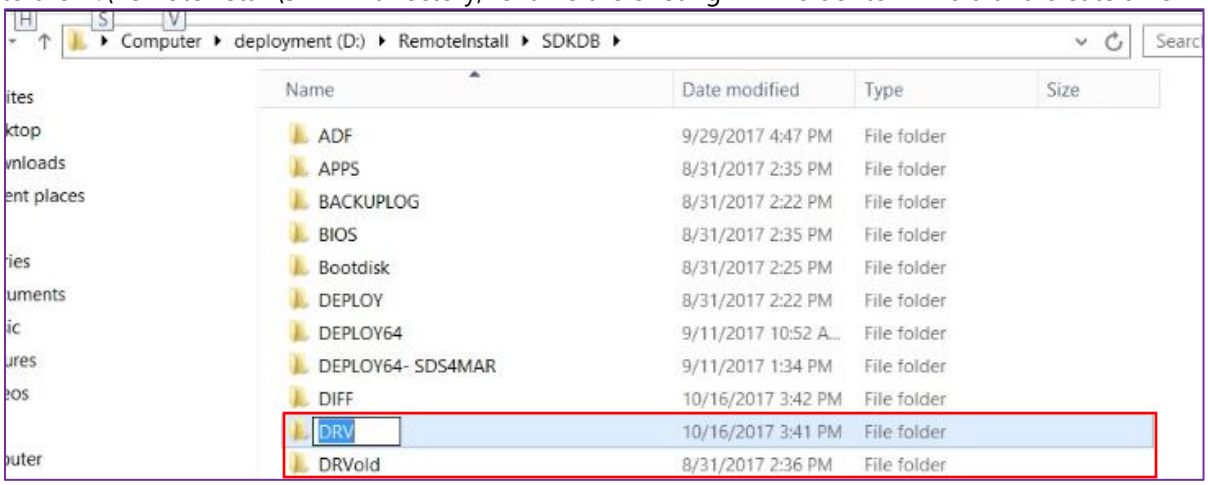
```
Const startDir = "C:\Users\Administrator\Desktop\HP 8460\nb_xx60-xx65_1.00\x86_win8"
Const endDir = "C:\Users\Administrator\Desktop\HP 8460\INF SUB\INF SUB 2"
Set oFSO   = CreateObject("Scripting.FileSystemObject")
```

6. Save and Close the FindINFused for edits.vbs file then double-click on it to run it.

7. Verify that the files are in the folder INF SUB. (The INF SUB 2 Folder will remain empty):




8. Go to the D:\RemoteInstall\SDKDB directory, rename the existing DRV folder to DRVold and create a new DRV folder:

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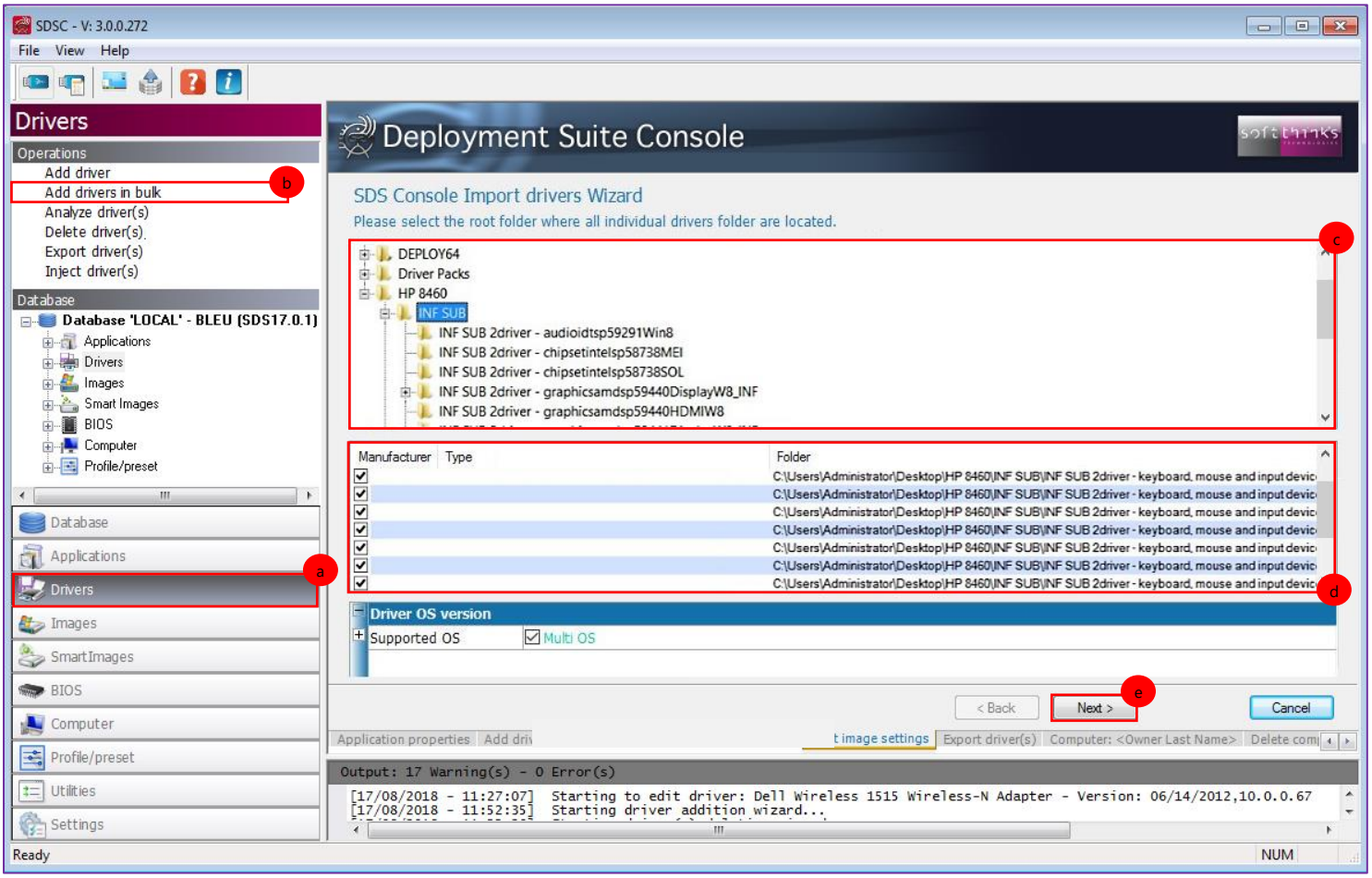
9. Open the SDS Management Console.
    a. Click on “Drivers” tab
    b. Click on the “Add drivers in Bulk” operation
    c. Browse to the INF SUB folder that you created and click on it
    d. Make sure all of the boxes are checked in the lower right screen
    e. Click on the “Next>” button




10. When the process is complete click the Finish Button in the lower right corner.
11. Copy the DRVInstaller.cmd file from the Driver Packs folder to the RemoteInstall\SDKDB\DRV folder:

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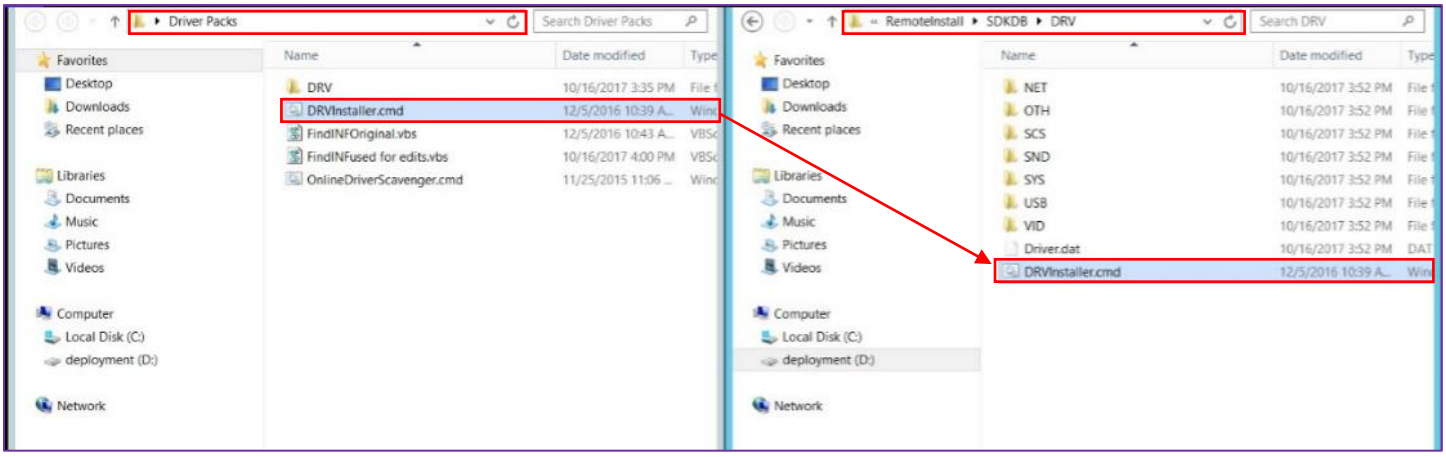
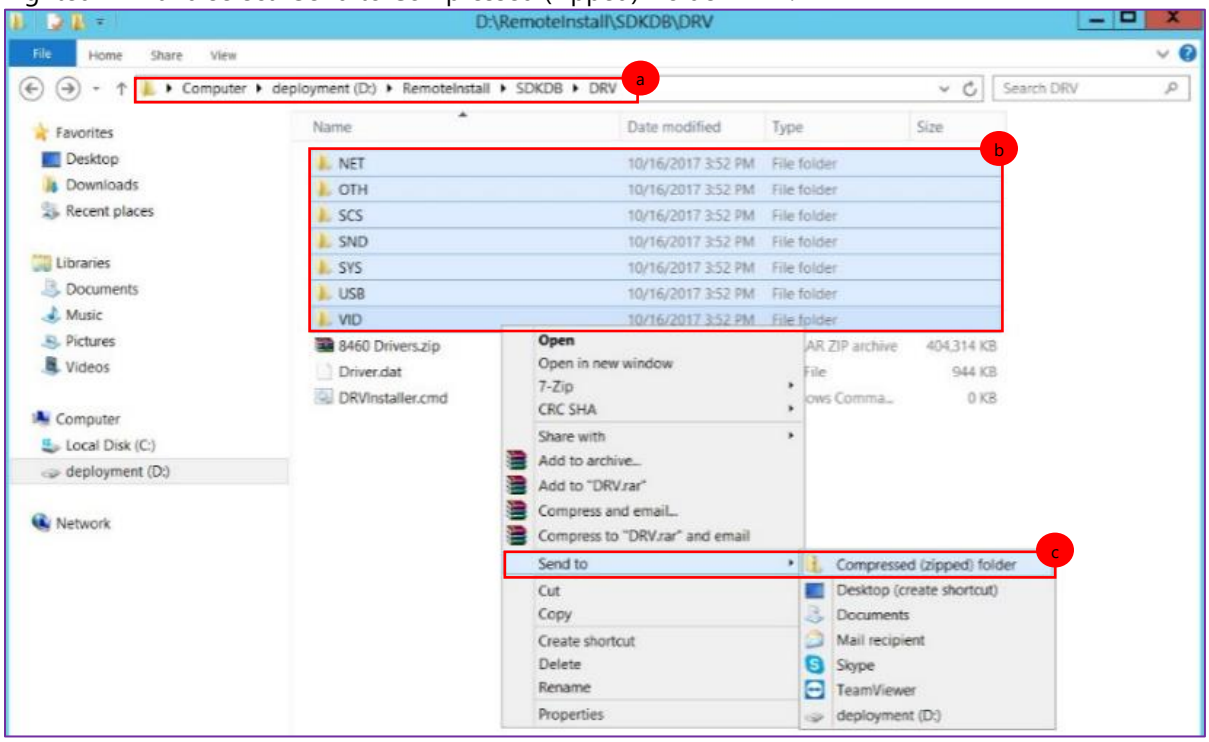



12. Select all of the folders in the RemoteInstall\SDKDB\DRV folder (a). Right click on them while they are highlighted (b) and select "Send to Compressed (zipped)" folder (c):

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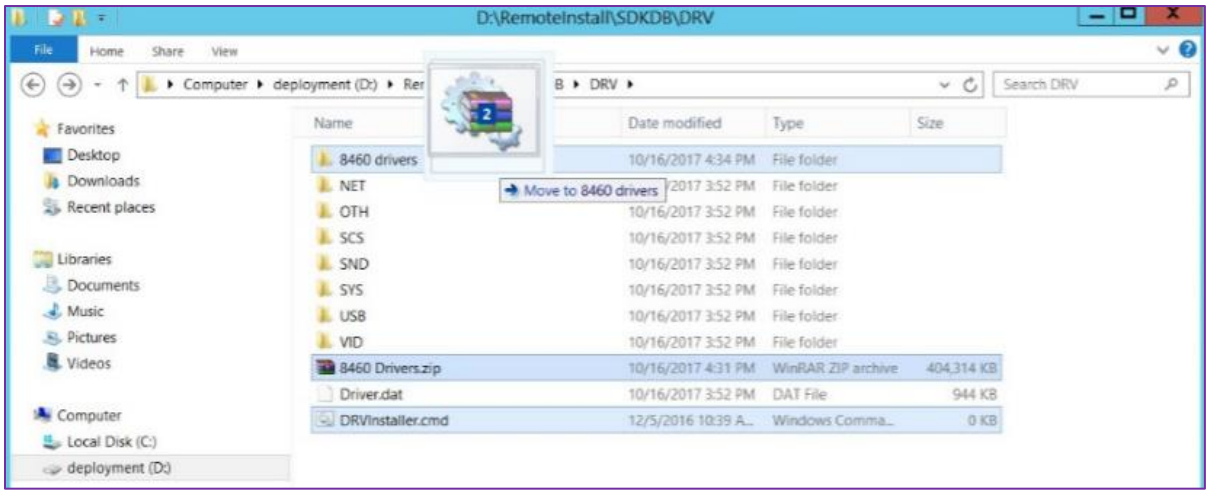
13. Create a new folder in the DRV Folder (name it whatever you like) and move the compressed file and the DRVInstaller.cmd file to it:

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14. Go back to the SDS Console

    a. Click on the “Applications” tab

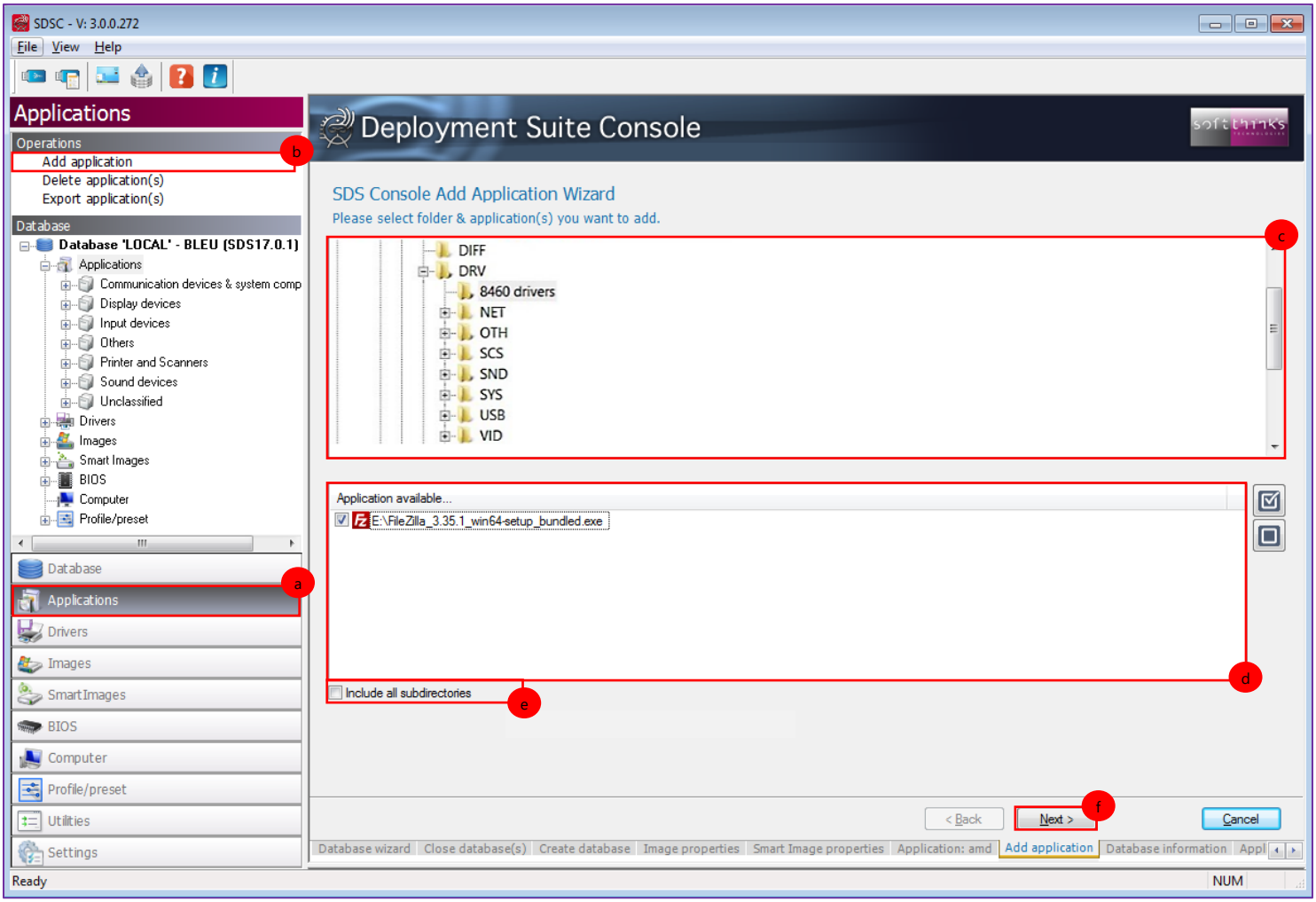
    b. Click on the “Add Application” operation

    c. Browse to and select the folder you created in the DRV folder

    d. Put a check in the box next to the DRVInstaller.cmd

    e. Make sure the box next to “Include all subdirectories” is checked as well

    f. Click on the “Next >” button

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15. The naming convention for the Driver Packs is “Manufacturer – Model – Operating System”. The manufacturer and Operating system are for you. The model is what is used by the system to find and install the driver pack.

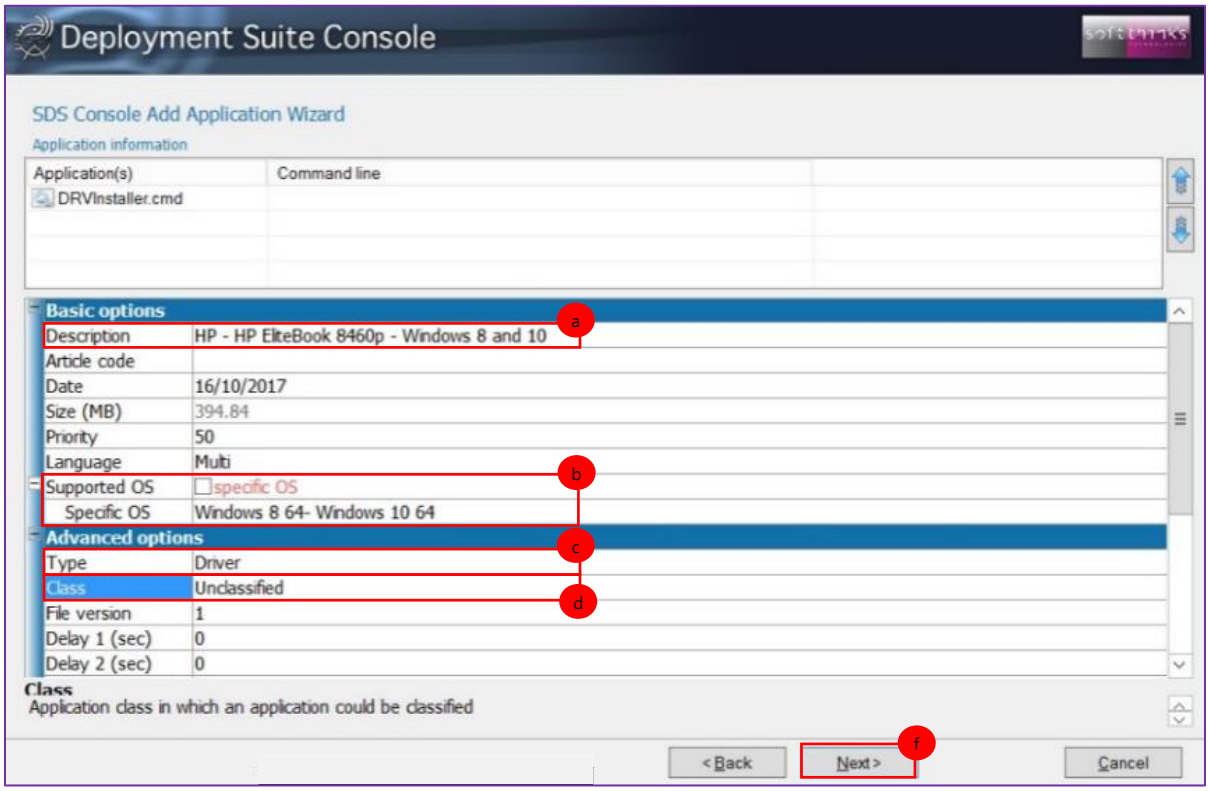
    a. Type the name in the “Description” field (a)

    b. Uncheck the box that says “Multi OS” next to “Supported OS” (b), and then in “Specific OS” select the Operating systems that the driver pack is for (Windows 7 is selected by default and will need to be unchecked if it is not needed)

    c. Set the Type to “Driver” (c)

    d. Set the Class to “Unclassified” (d)

    e. Click on the “Next >” button (e)

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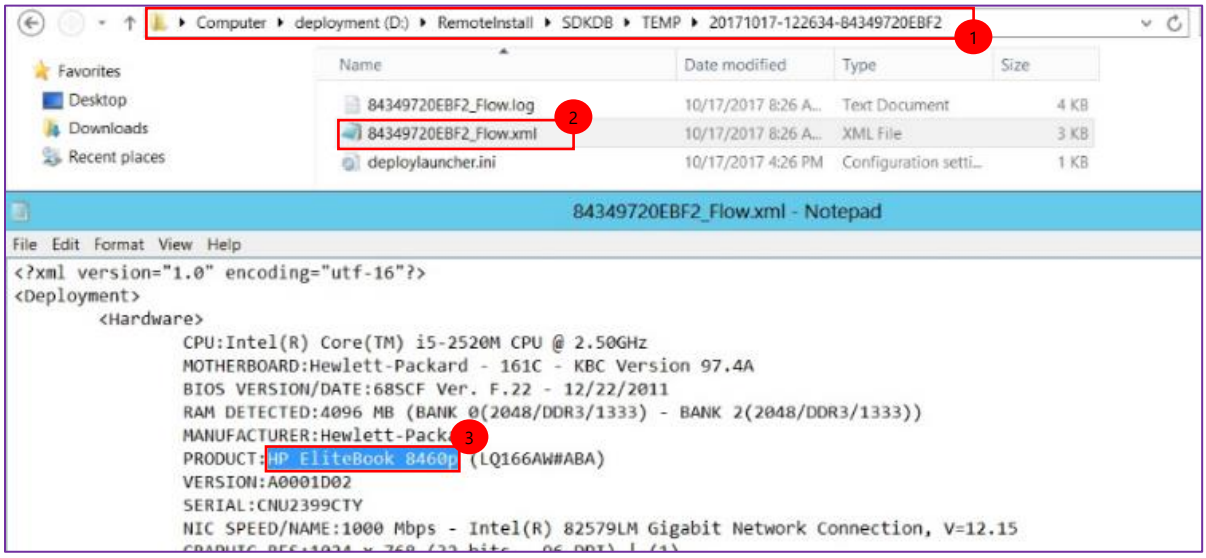
**Note:** In order to get the correct name, you will need to boot the model of the computer for which you are creating the Driver Pack

a. Go to SDKDB\Temp and open the Temp folder for that computer

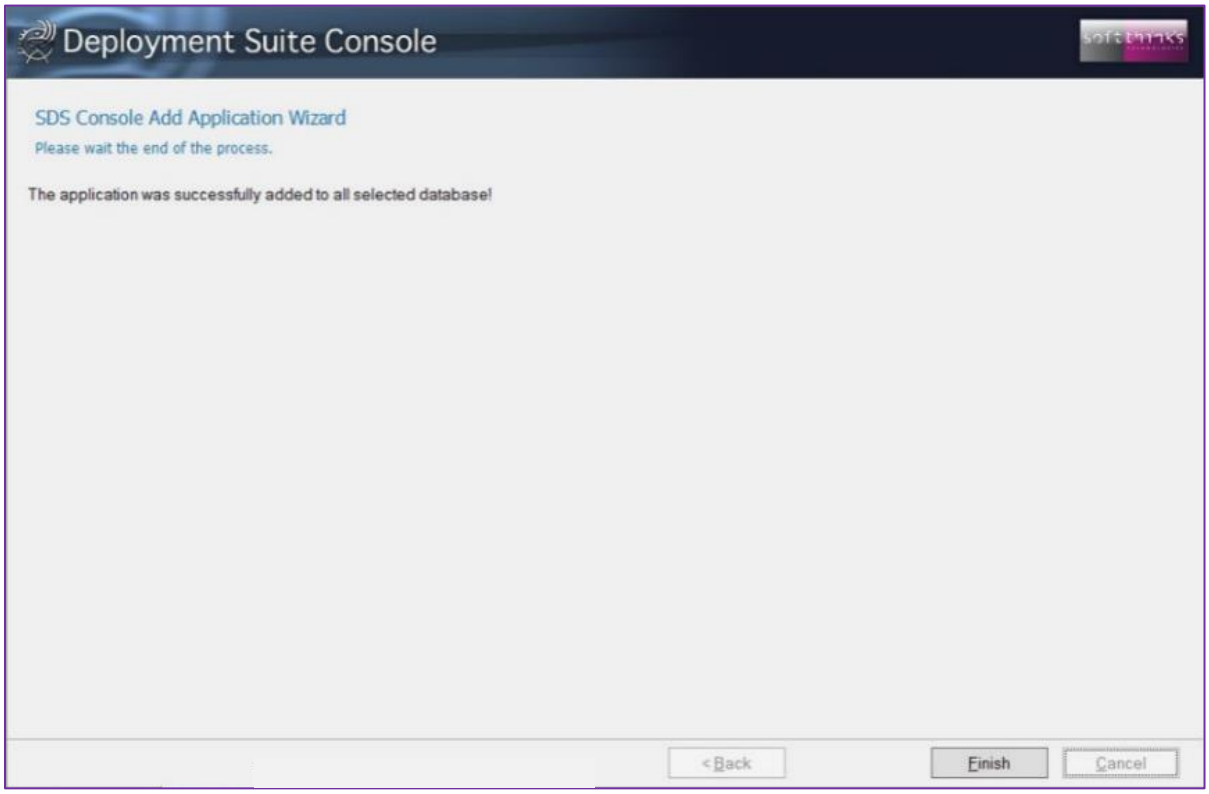
b. Select the file ending with _Flow.xml and right click to edit it

c. Go to the line that says "PRODUCT:" and copy the model name of the computer

d. Paste that name in the Middle part of the description (for this example, it would be HP – HP Elitebook 8460p – Windows 8 and 10 64 bit.):




16. Click Finish when the driver pack is finished being created:

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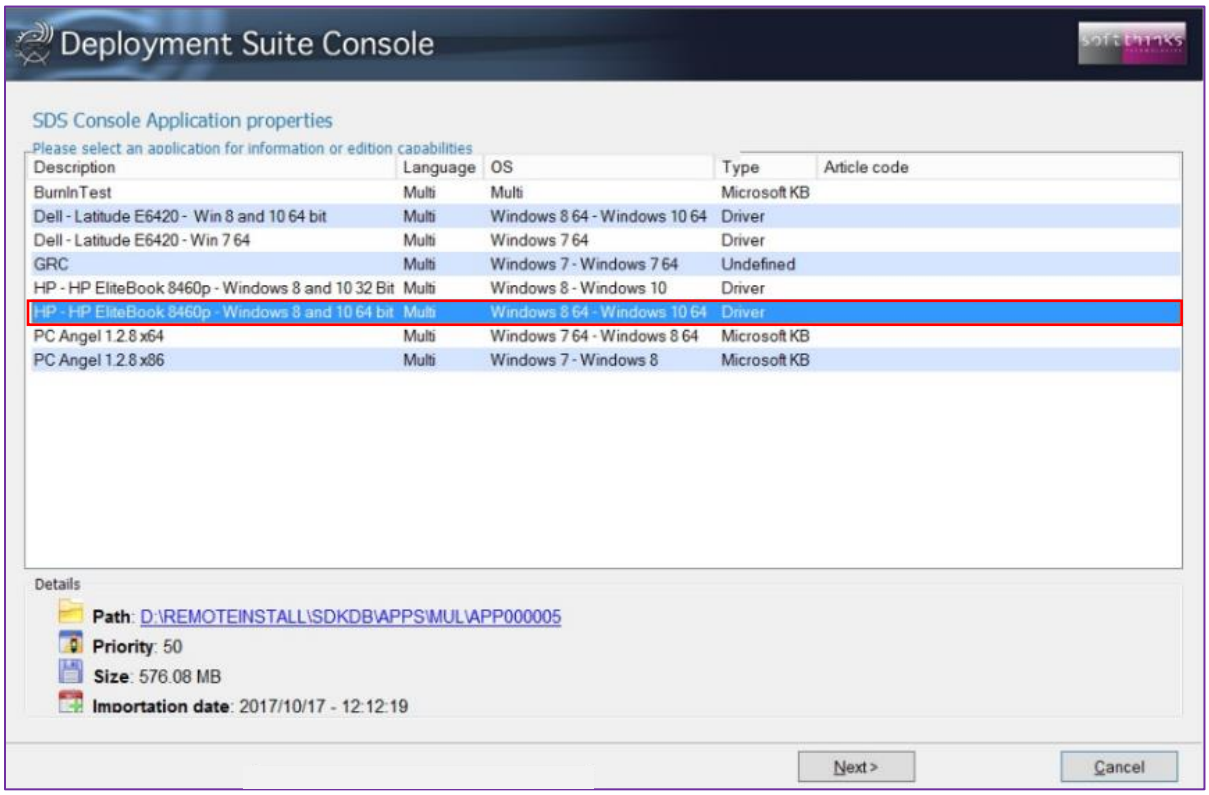
17. The new driver pack will be listed in your Applications:




**Note:** if the model name and the OS match, the Driver Pack will be selected automatically by the system. It does not have to be manually selected by the technician.

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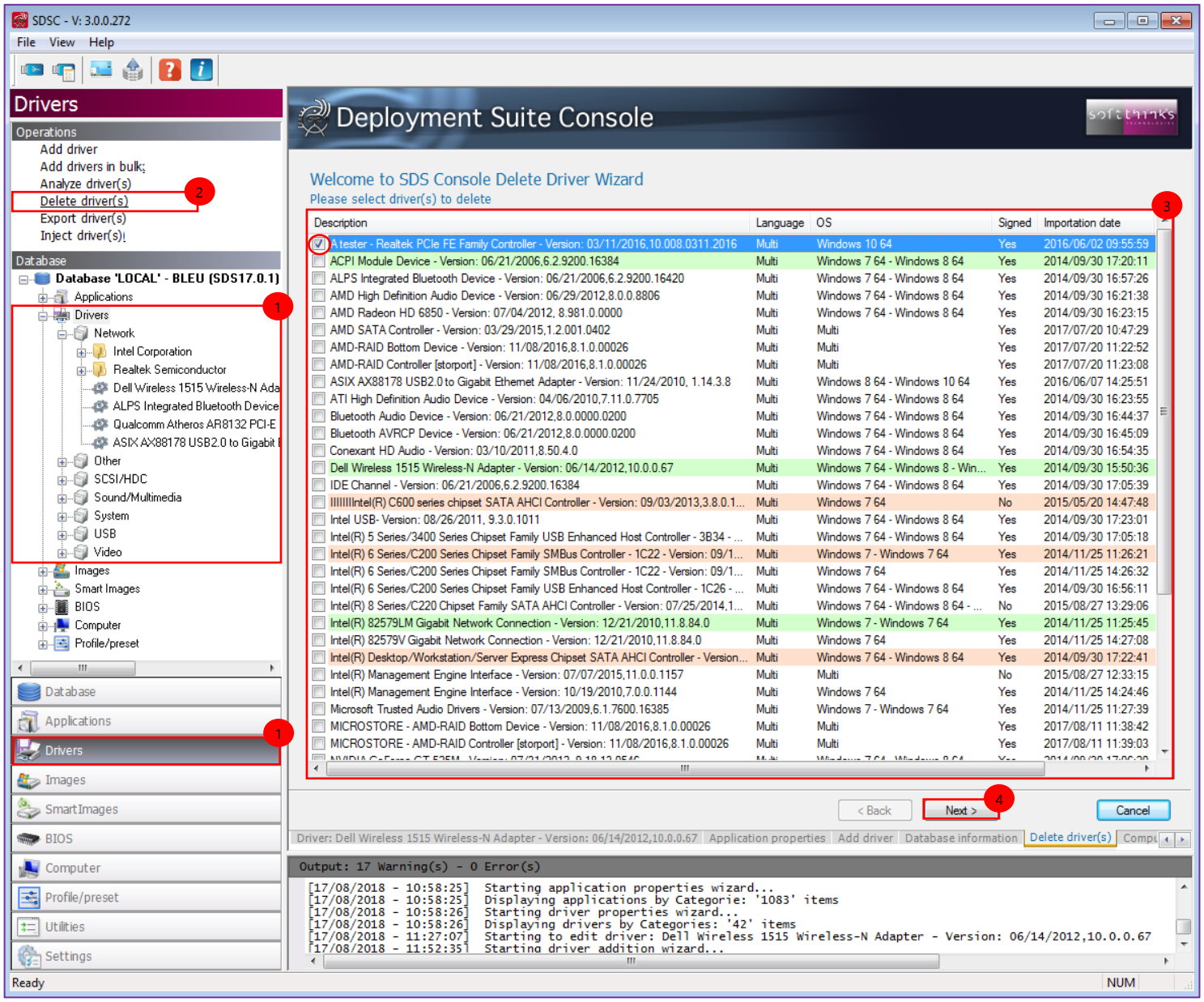
## Deleting drivers (“Delete Driver(s)” operation)

In order to delete one or more drivers,

1. Click on the “Drivers” tab (1), or on the “Drivers” item in the Database tree-view (1)
2. Click on the “Delete driver(s)” operation (2)
3. Select the driver(s) you want to remove from the database in the list on the right (3). If you don’t see a driver you recently added, press F5 to refresh the list contents.
4. Click on the “Next >” button (4)




5. The wizard will inform you once the drivers will have been removed from the database.

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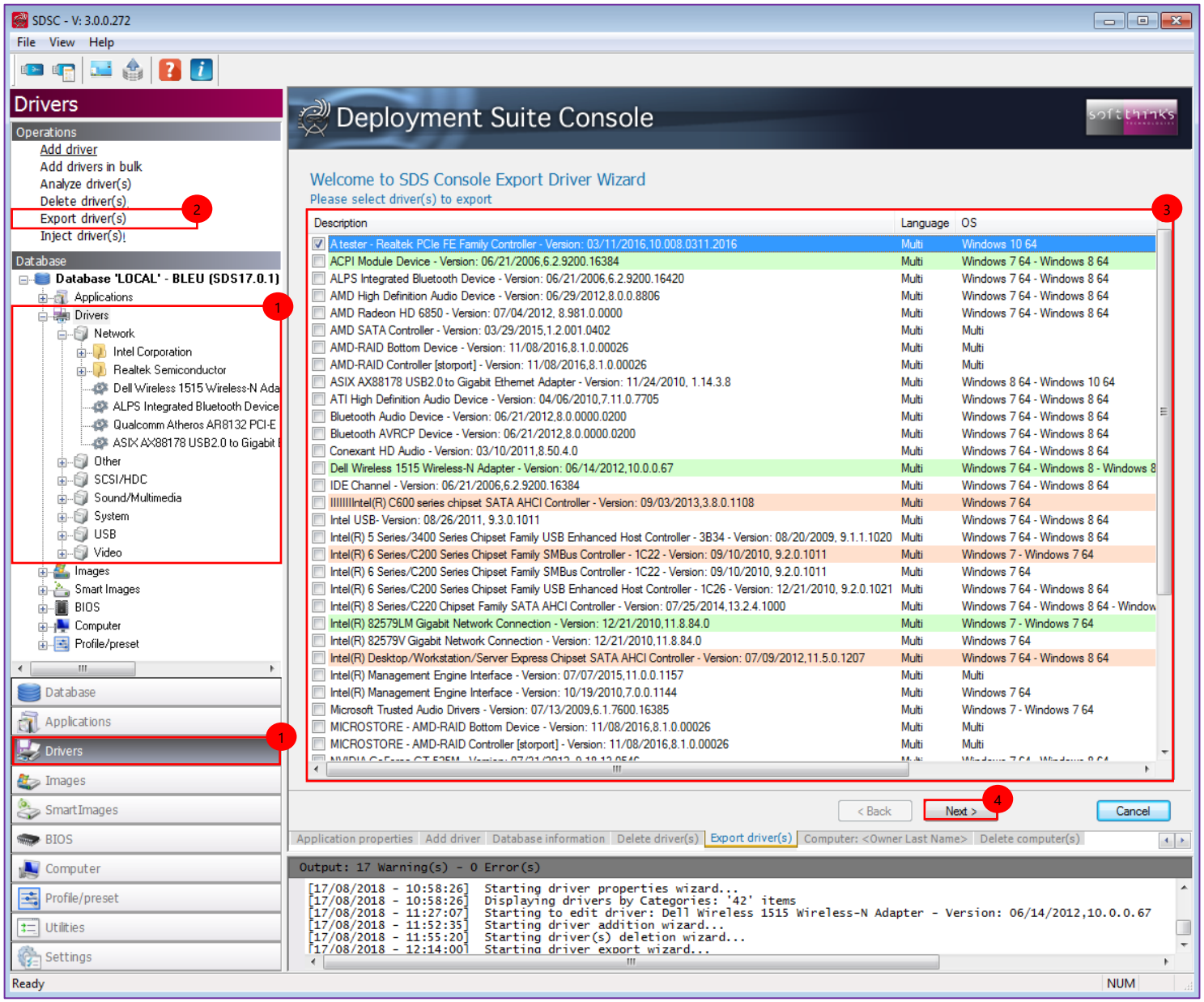
**Note**: Deletion is permanent. There is no method to undo a delete. Be careful when selecting drivers for deletion and review them.

### Exporting a driver ("Export Driver(s)" operation)

In order to export one or more drivers:

1. Click on the "Drivers" tab (1), or on the "Drivers" item in the Database tree-view (1)
2. Click on the "Export driver(s)" operation (2)
3. Select the driver(s) you want to export in the list on the right (3). If you don't see a driver you recently added, press F5 to refresh the list contents.
4. Click on "Next >" button (4)

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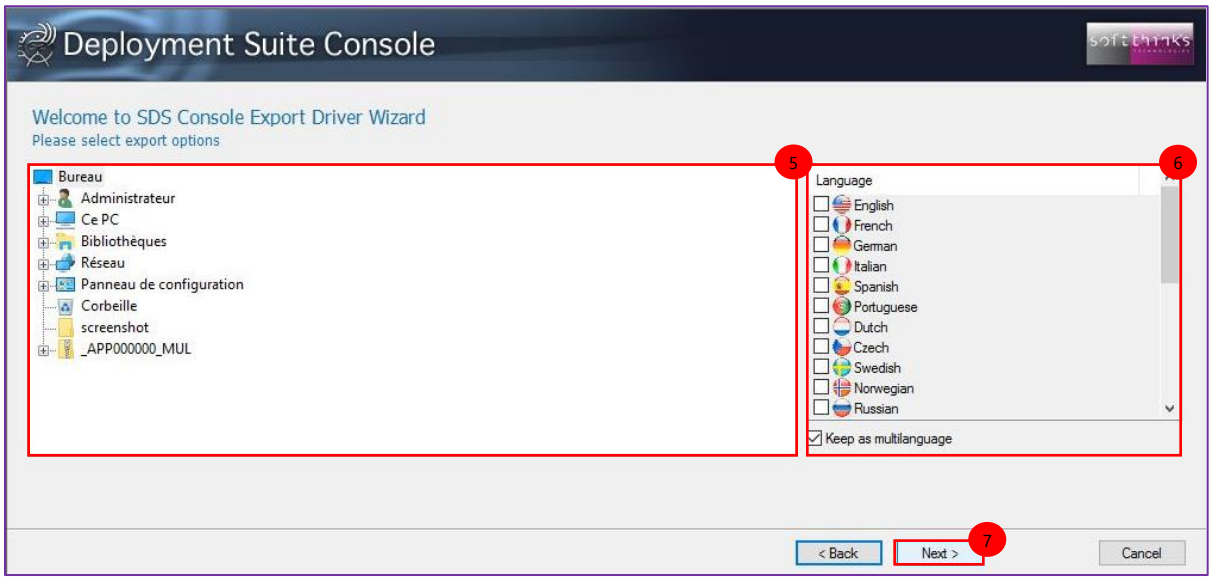
5. Select the destination folder where the ZIP files will be created 5
6. Select the languages supported 6, or check the “Keep as Multilanguage” option to allow the package to work with all languages
7. Click on the “Next” button 7




8. The wizard will display a progress screen and then a confirmation screen when the driver(s) are successfully exported.

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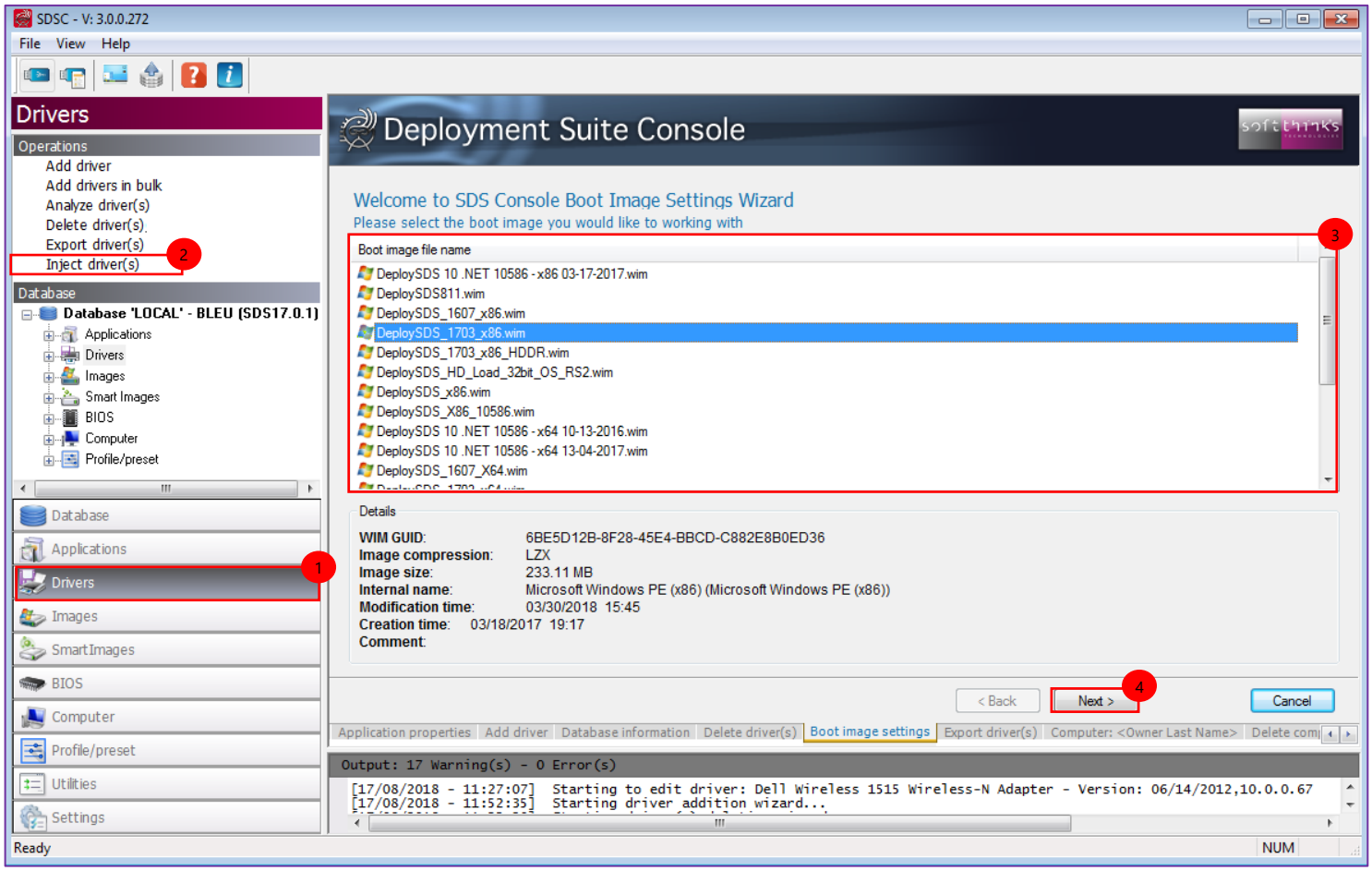
## Injecting drivers (“Inject Driver(s)” operation)

1. Click on “Drivers” tab (1)
2. Click on the “Inject driver(s)” operation (2)
3. Select the boot image into which you want to inject the driver(s) in the list (3)
4. Click on the “Next >” button (4)

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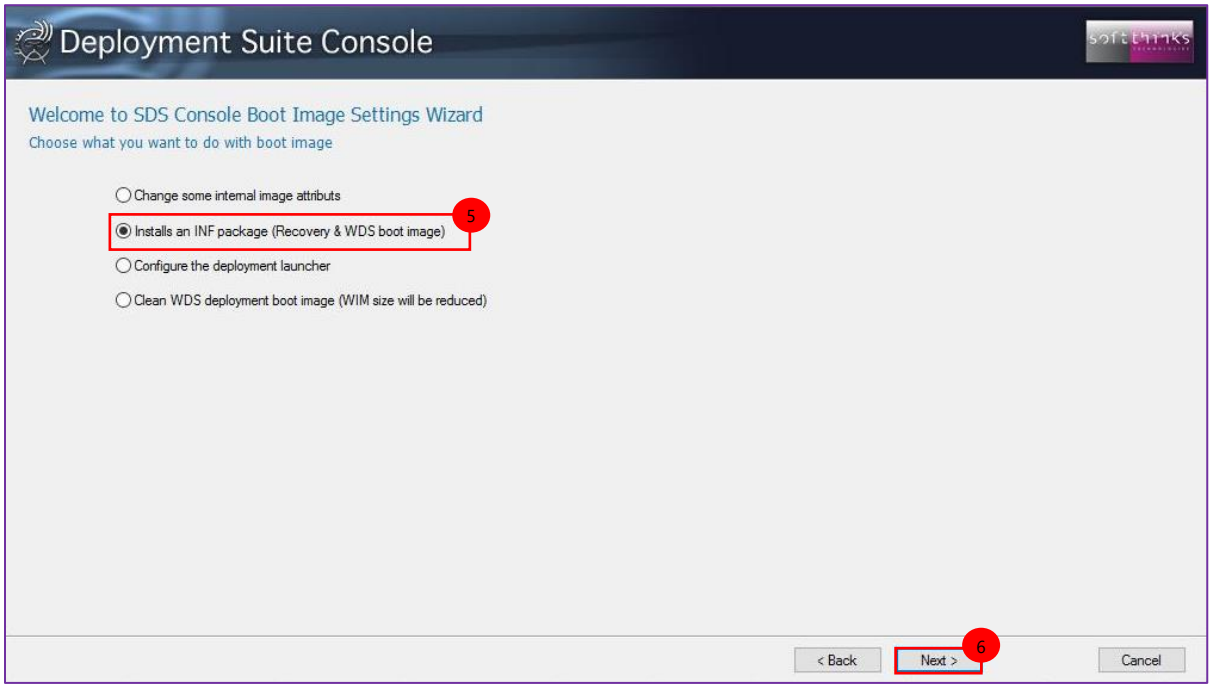
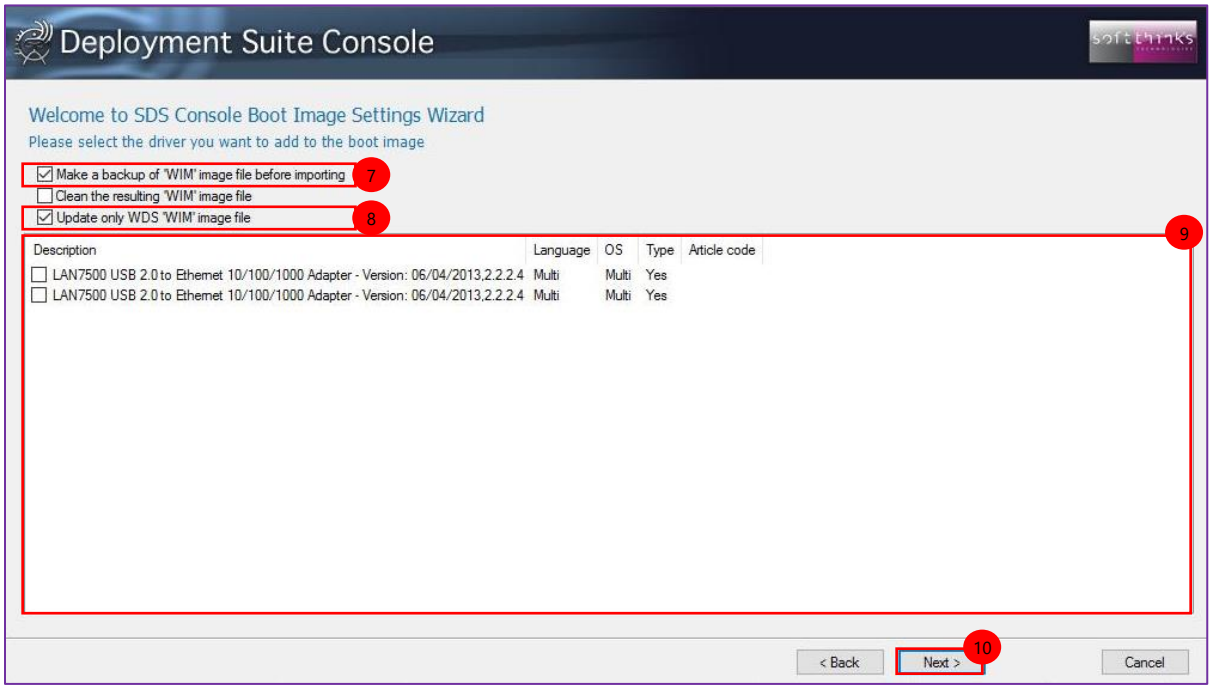
5. Choose the “Install an INF package (Recovery & WDS boot image)” option 5
6. Click on the “Next >” button 6




7. Check the options “Make a backup of ‘WIM’ image file before importing” 7
8. Check the option “Update only WDS ‘WIM’ image file” 8
9. Select the driver(s) to inject 9
10. Click on the “Next >” button 10

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11. The wizard will notify you once the process is completed

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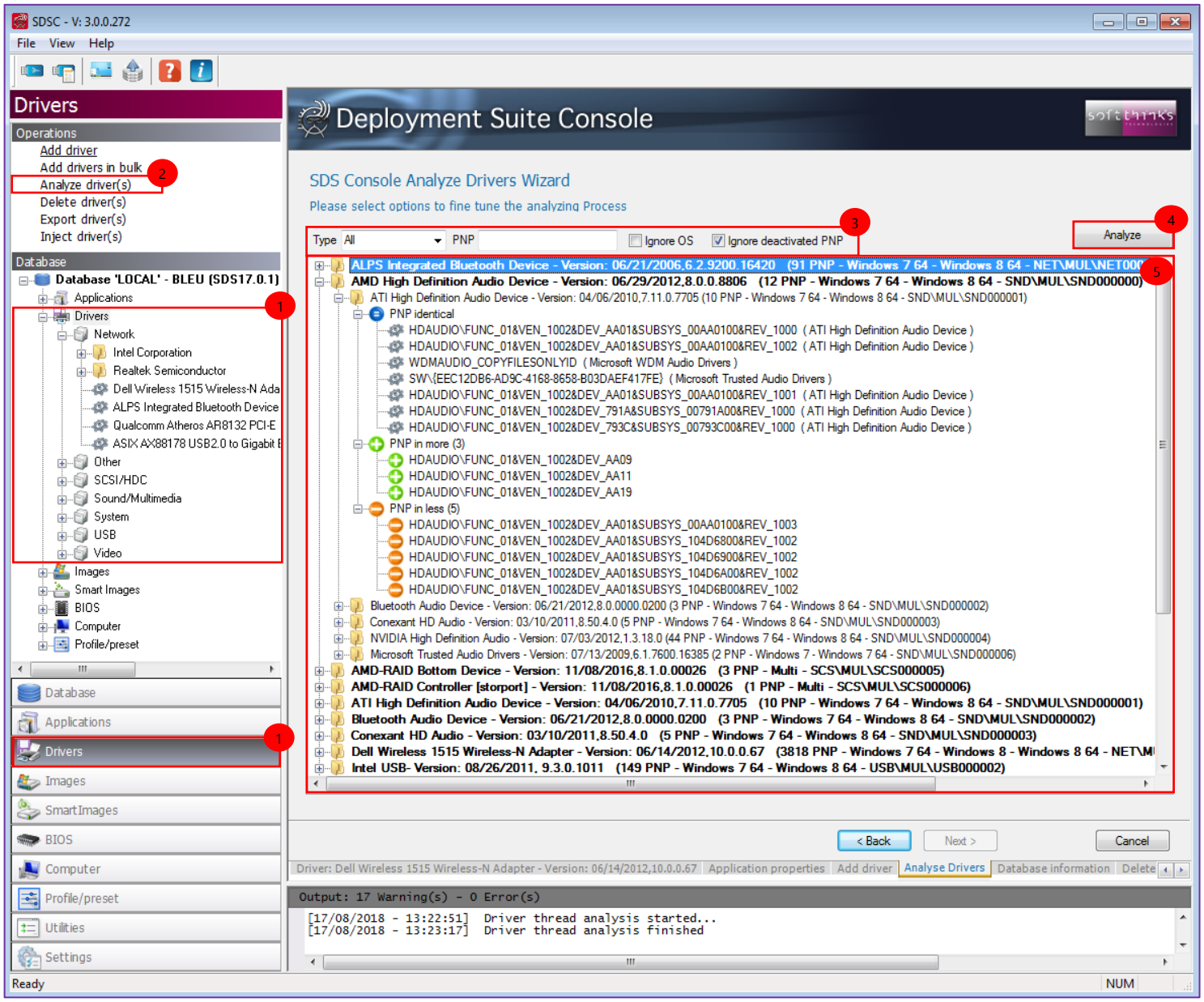
## Analyzing drivers (“Analyze driver(s)” operation)

This tool provides an easy way to identify and remove duplicate drivers, typically drivers that support the same PNP IDs but are of different description or names in the database.

1. Click on the “Drivers” tab or the “Drivers” item in the Database tree-view (1)
2. Click on the “Analyze driver(s)” operation (2)
3. Select the options to fine tune the analysis (driver type, driver PNP, ignore OS, ignore deactivated PNP) (3)
4. Click on the “Analyze” button (4)

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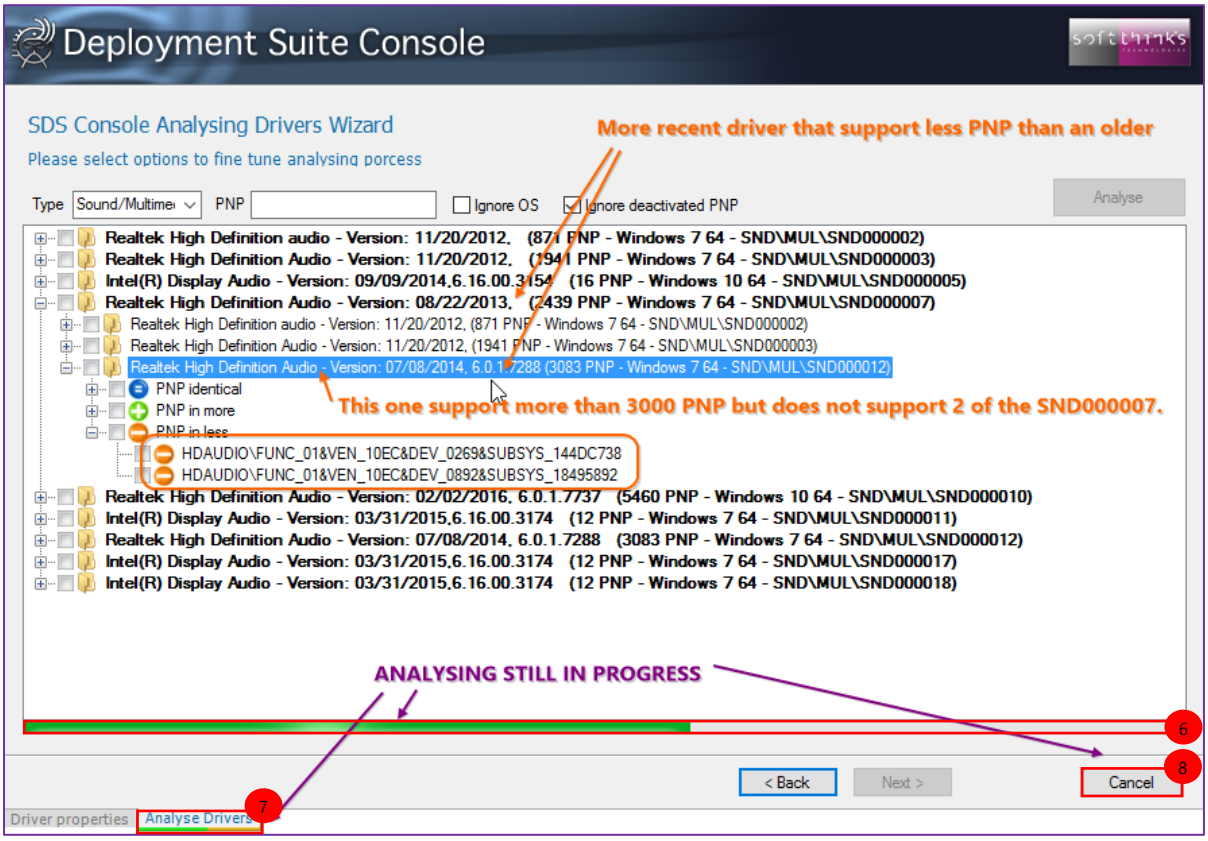
The drivers are listed (5) while they are parsed and the progress bar (6) shows the current status (also in the tab (7) to follow it when you switch between views). You can stop the analysis at any moment by clicking on the « Cancel » button (8).

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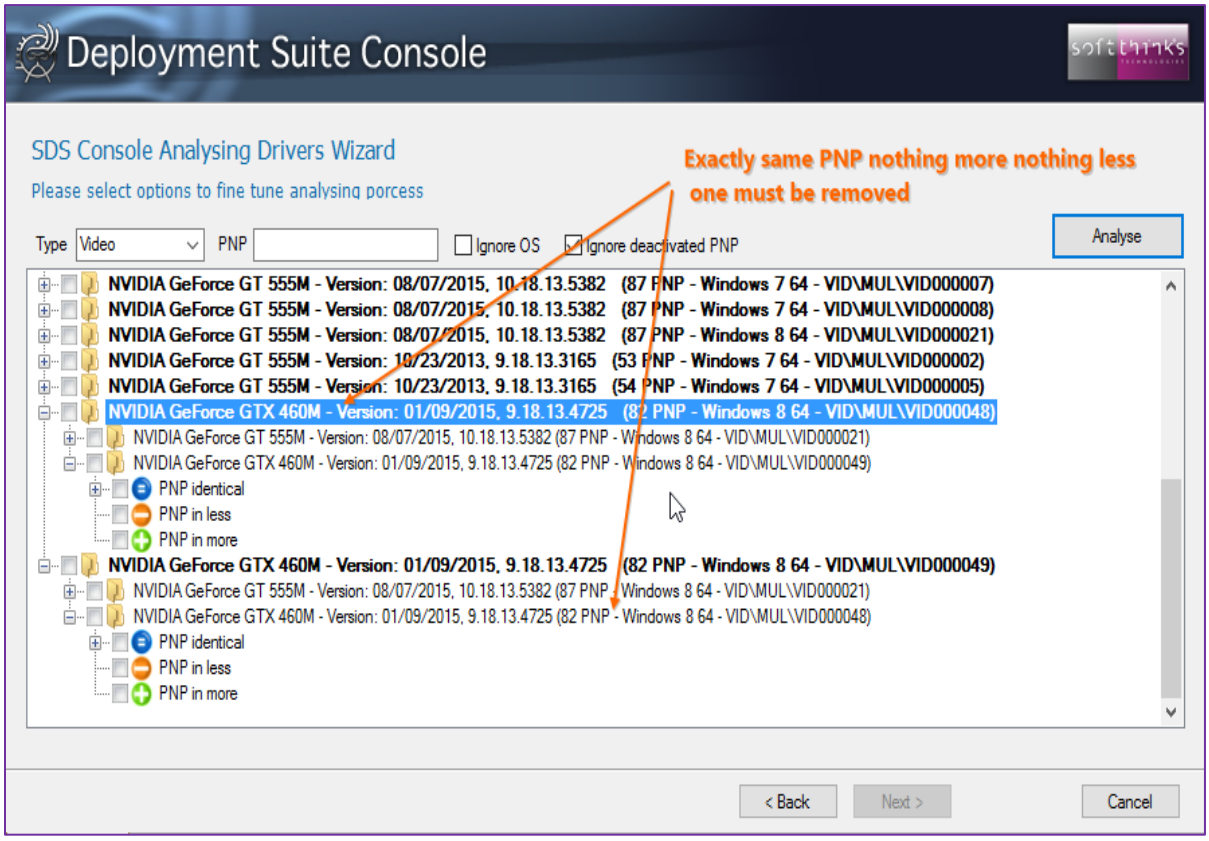


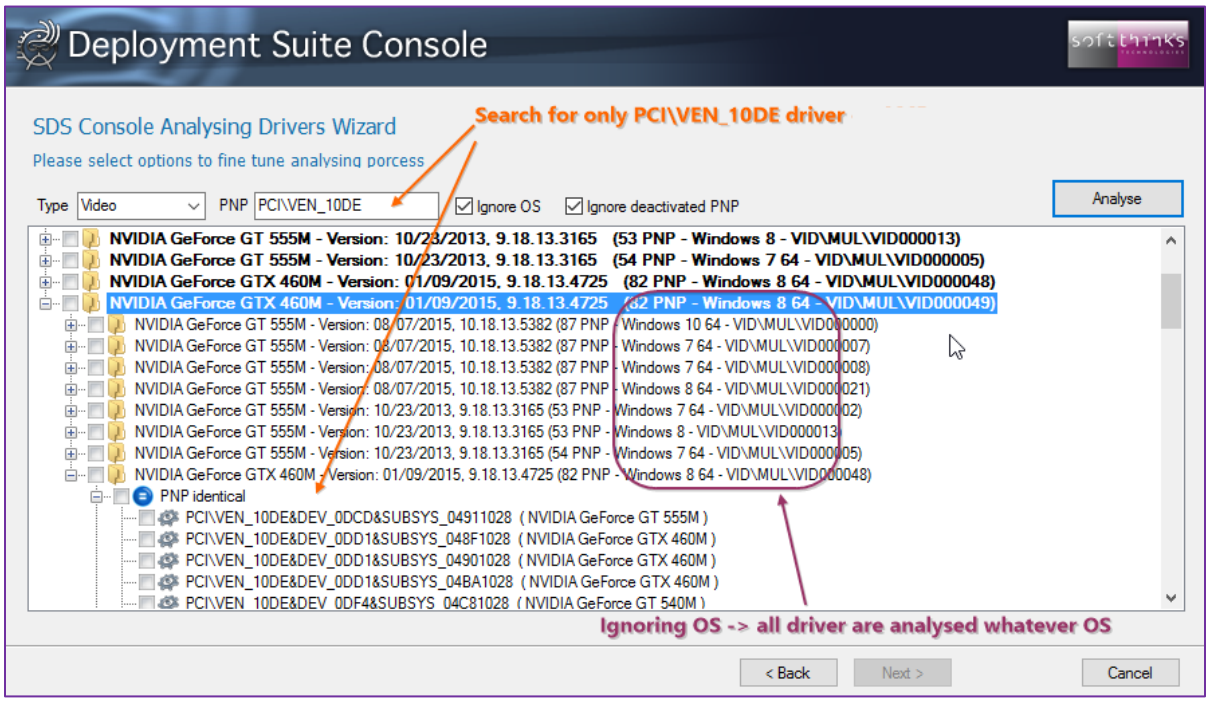


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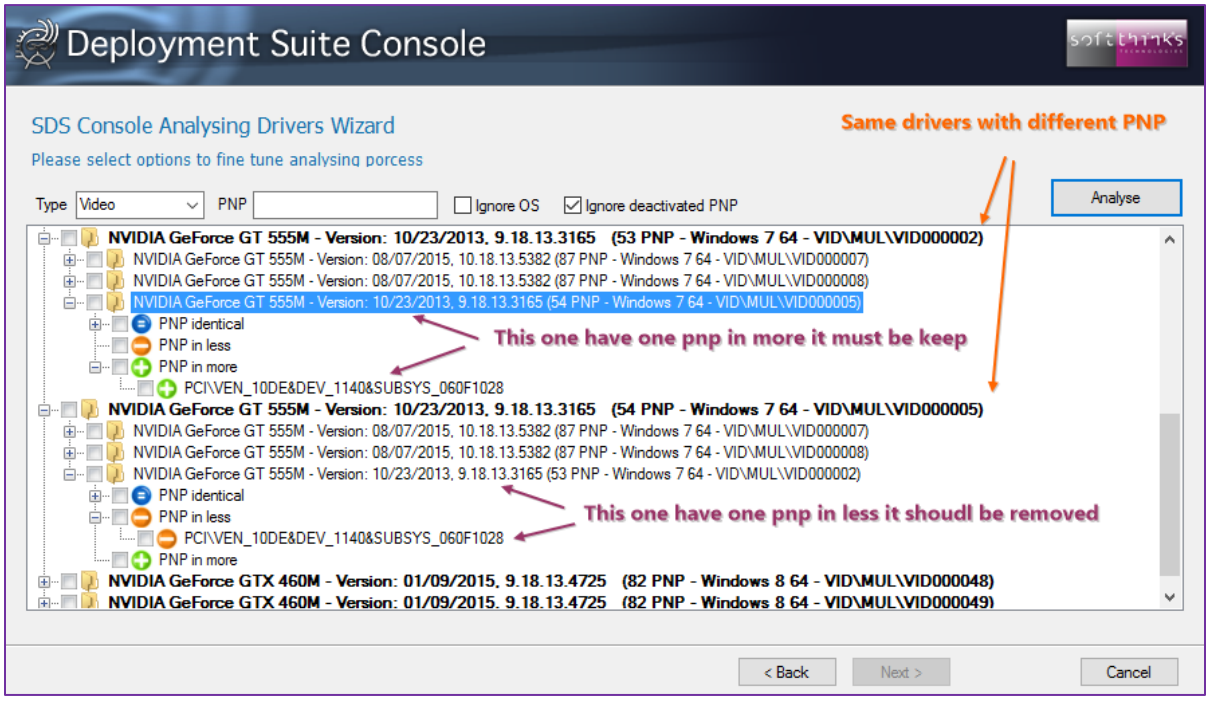


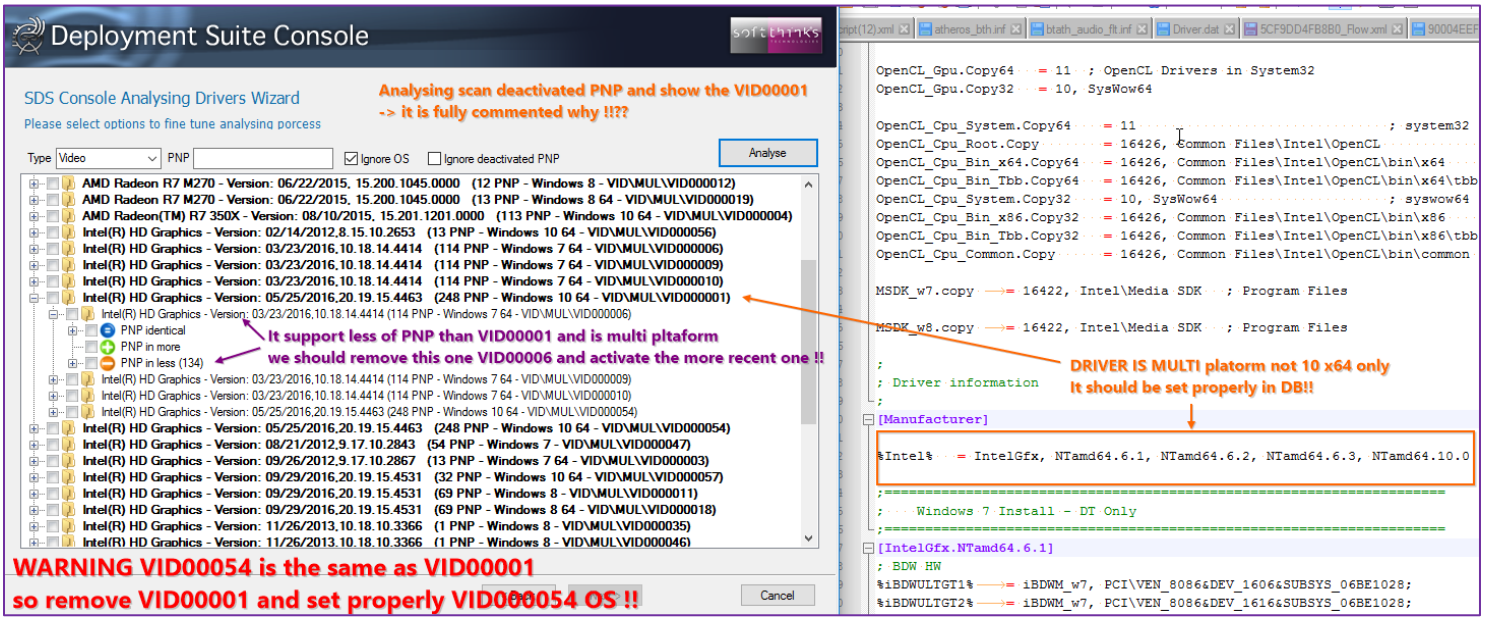


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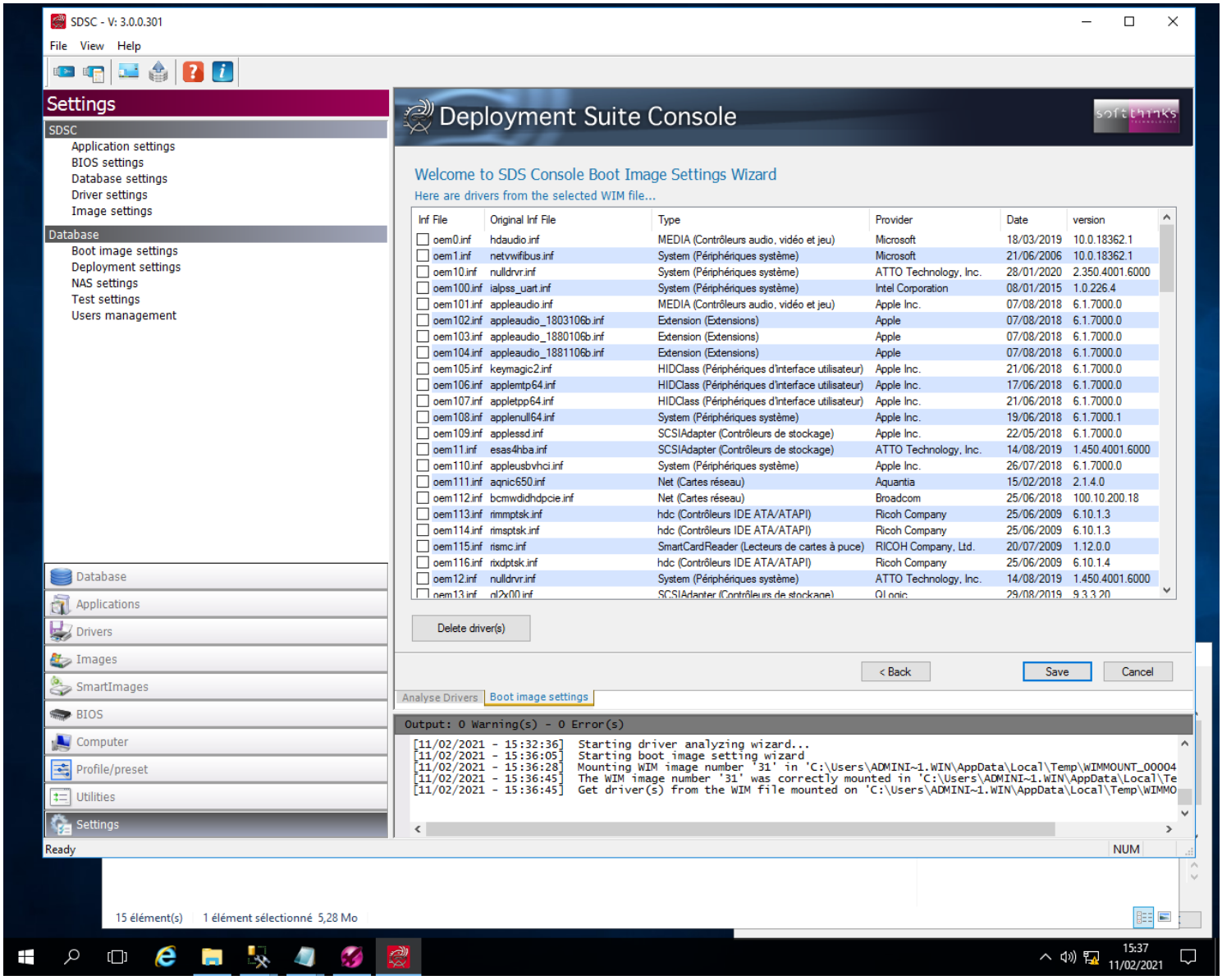


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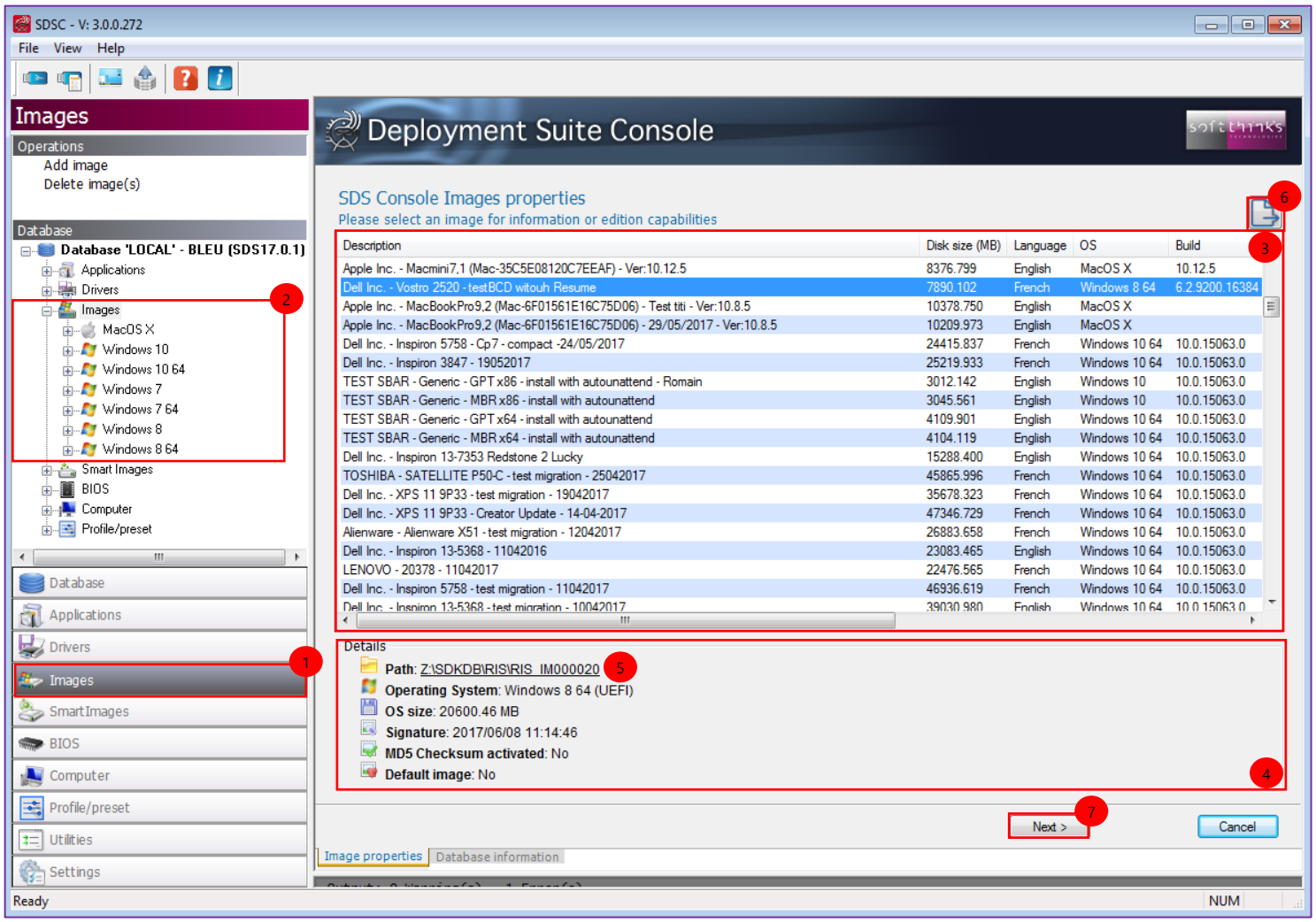
# Images

You can explore the Images of your database by clicking on the “Images” tab 1, or directly on the “Images” object in the Database tree-view 2 :




When you select an image in the list 3, you will see all of its details below 4, including its path that you can open by clicking on the link 5.

You can export the list of the images by clicking on the button 6 and then selecting the output file path and format (CSV or TXT).

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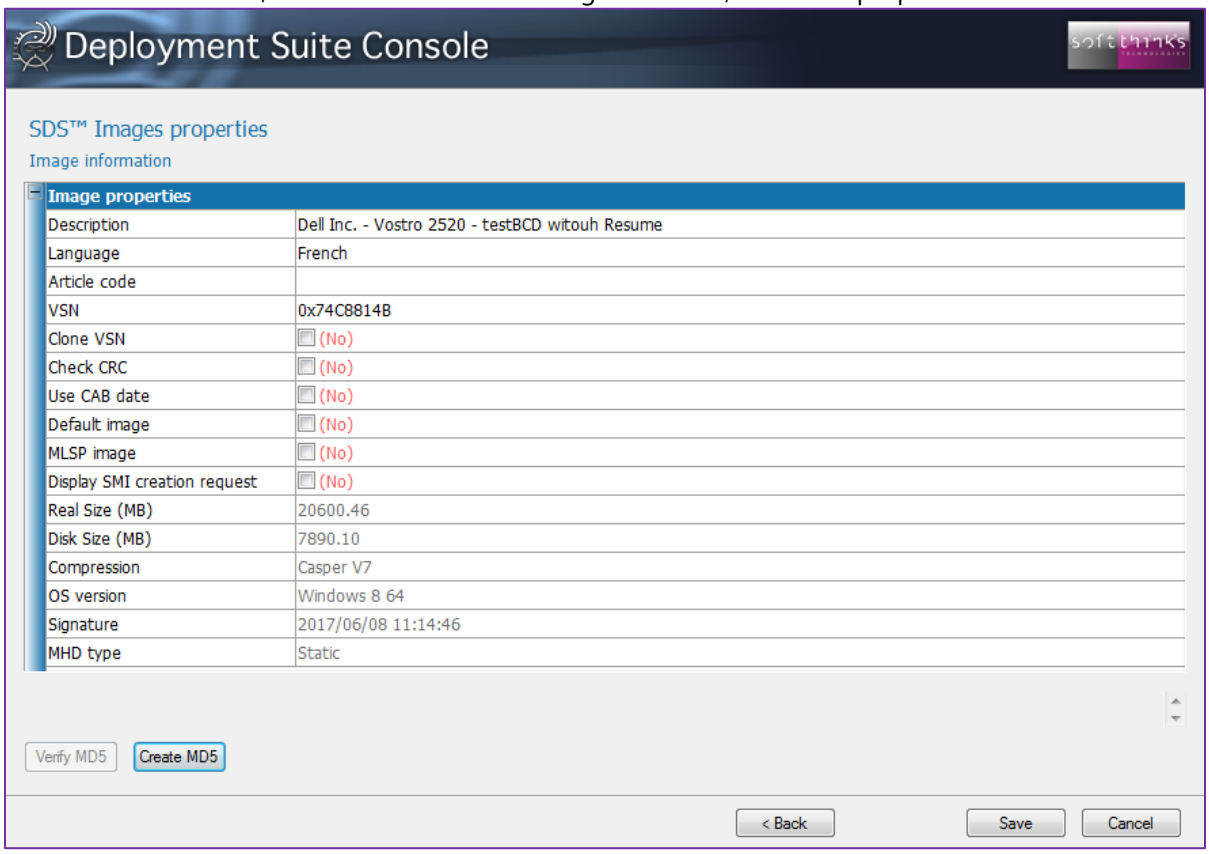
Click on the “Next >” button 7 , or double click on the image in the list, to edit its properties:

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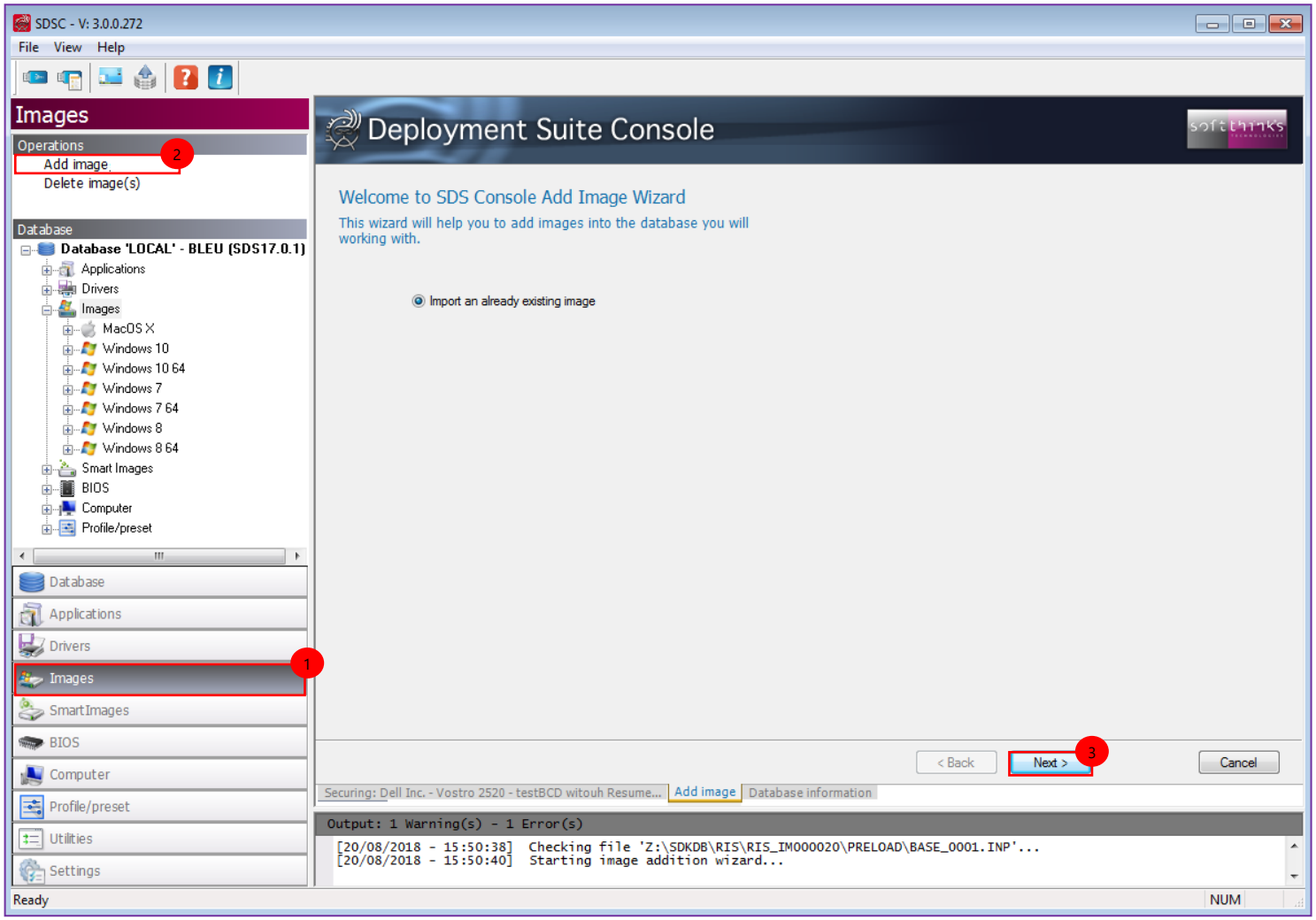
### Adding an image (“Add image” operation)

(**Note**: Most of the time images will be created directly from the computer with the source image on it through the Welcome Screen and the Image Creation page and not the Console. These instructions are for information purposes only.)

1. Click on the “Images” tab
2. Click on the “Add Image” operation
3. Click on the “Next >” button

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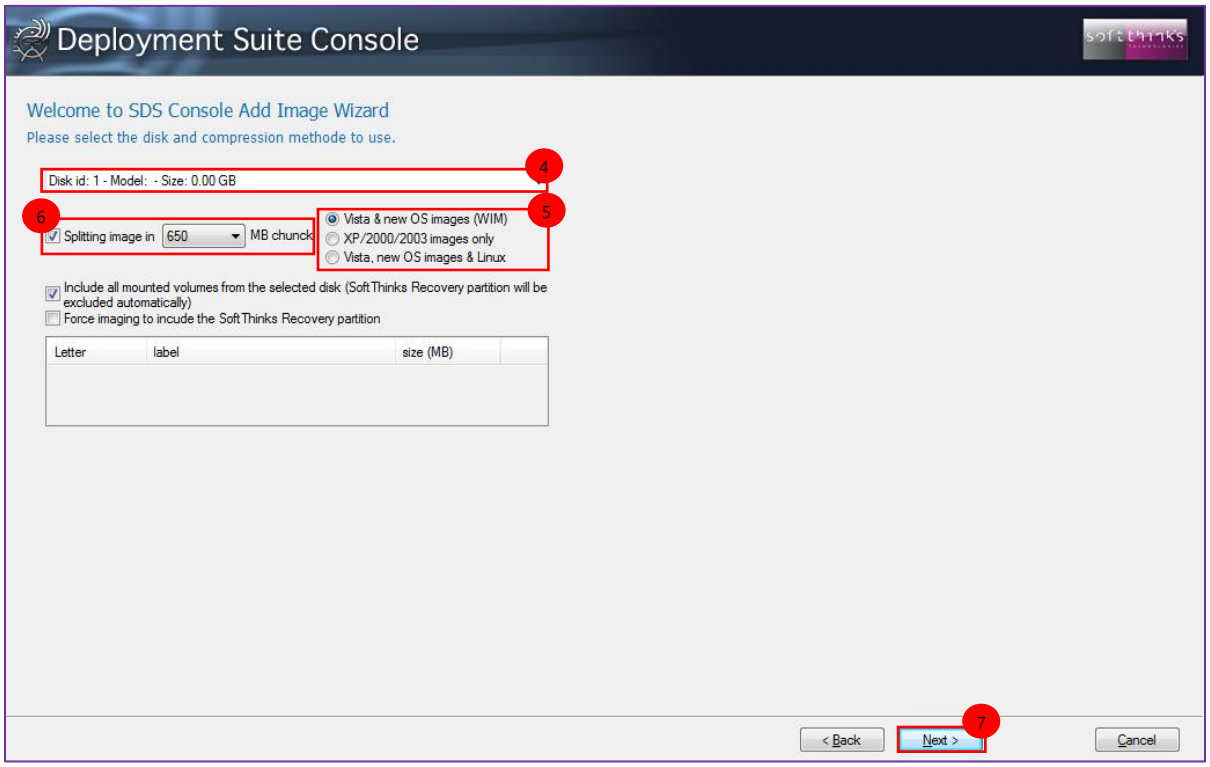
4. From the pull-down menu (4), select the volume letter corresponding to the hard disk that will be imported

5. Select the image format you wish to use (5):
   - **Vista & new OS images (WIM):** Microsoft's Windows Image format. File based image format compatible with Windows Vista and newer OS. WIM files modified using standard Microsoft OPK Tools and by SDS. This is the format of the WinPE boot image.
   - **XP/2000/2003 images only:** Casper, the SoftThinks standard format used in current releases of SDS, very reliable, robust and time tested. The contents of these files cannot be modified post creation.
   - **VD:** Virtual Disk, a format from SoftThinks which can be used for static images and has very good speed advantages. The contents cannot be modified.

6. Specify if you want to split the image (6), and if so the size of the chunks
   **Note:** The option for Splitting Image in 650MB chunks is for use with WIM format – if this option is chosen, the WIM file can no longer be modified – a limitation imposed by Microsoft. However, smaller file sizes will reduce the network traffic and allow any type of optical media to be used to create backups. It is recommended that the smaller size be used.

7. Click on the "Next >" button (7)

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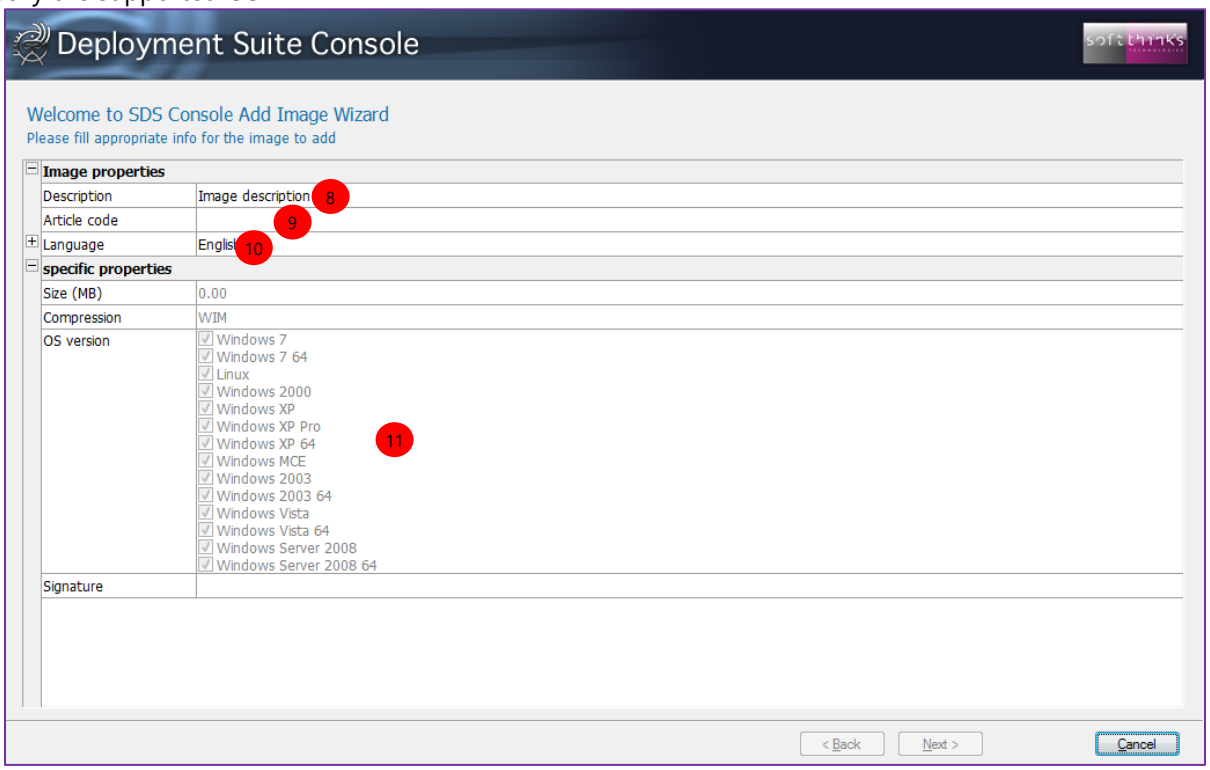
8. Enter a description for your image (8)
9. Enter an article code (not commonly used) to associate with this image (9)
10. Specify the language (10)
11. Specify the supported OS (11)

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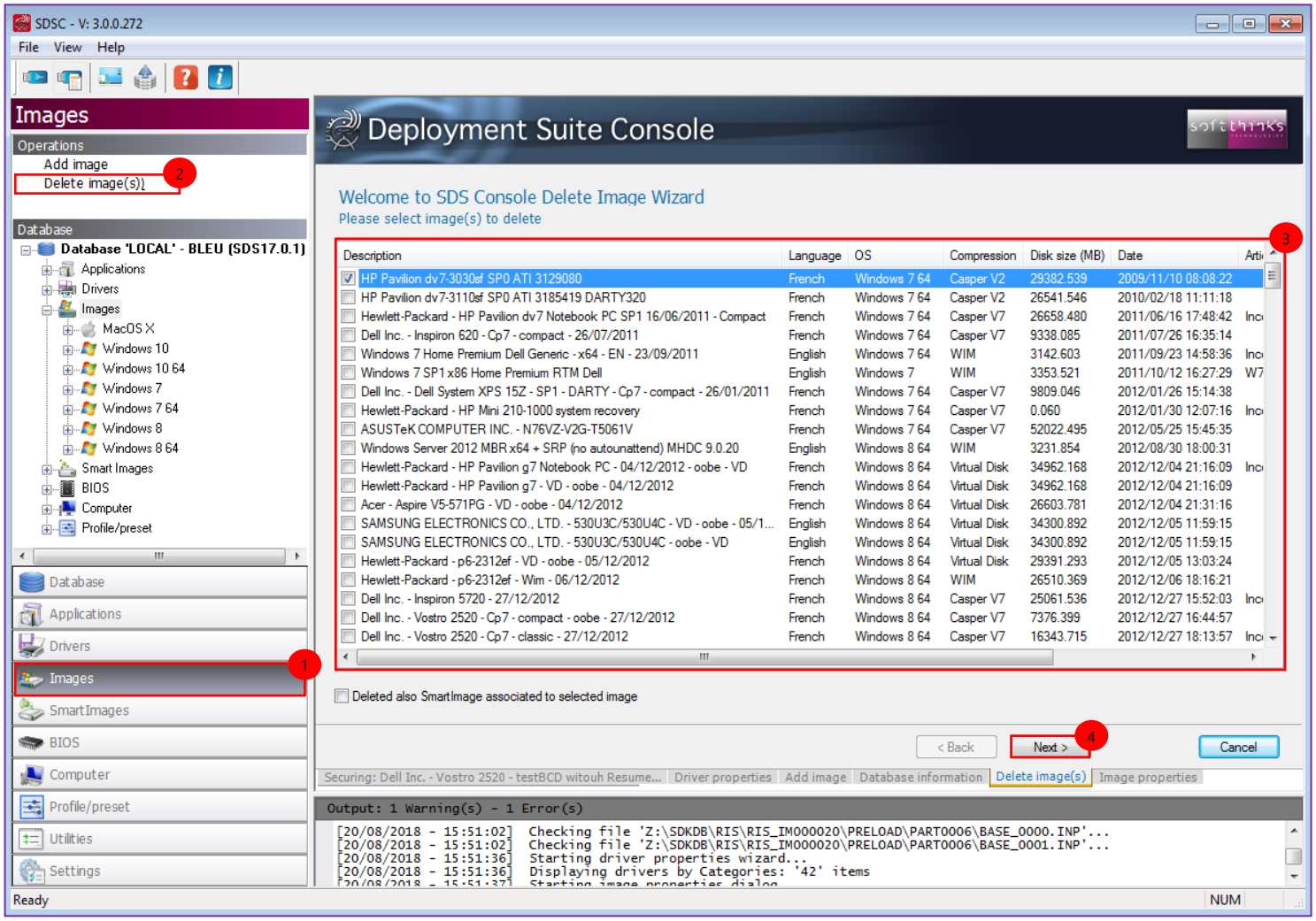
## Deleting images (“Delete image(s)” operation)

1. Click on the “Images” tab (1)
2. Click on the “Delete image(s)” operation (2)
3. Select the image(s) to remove in the list (3). If you don’t see an image you recently added, press F5 to refresh the list contents.
4. Click on the “Next >” button (4)




**Note**: Deletion is permanent. There is no method to undo a delete. Be careful when selecting images for deletion and review them.

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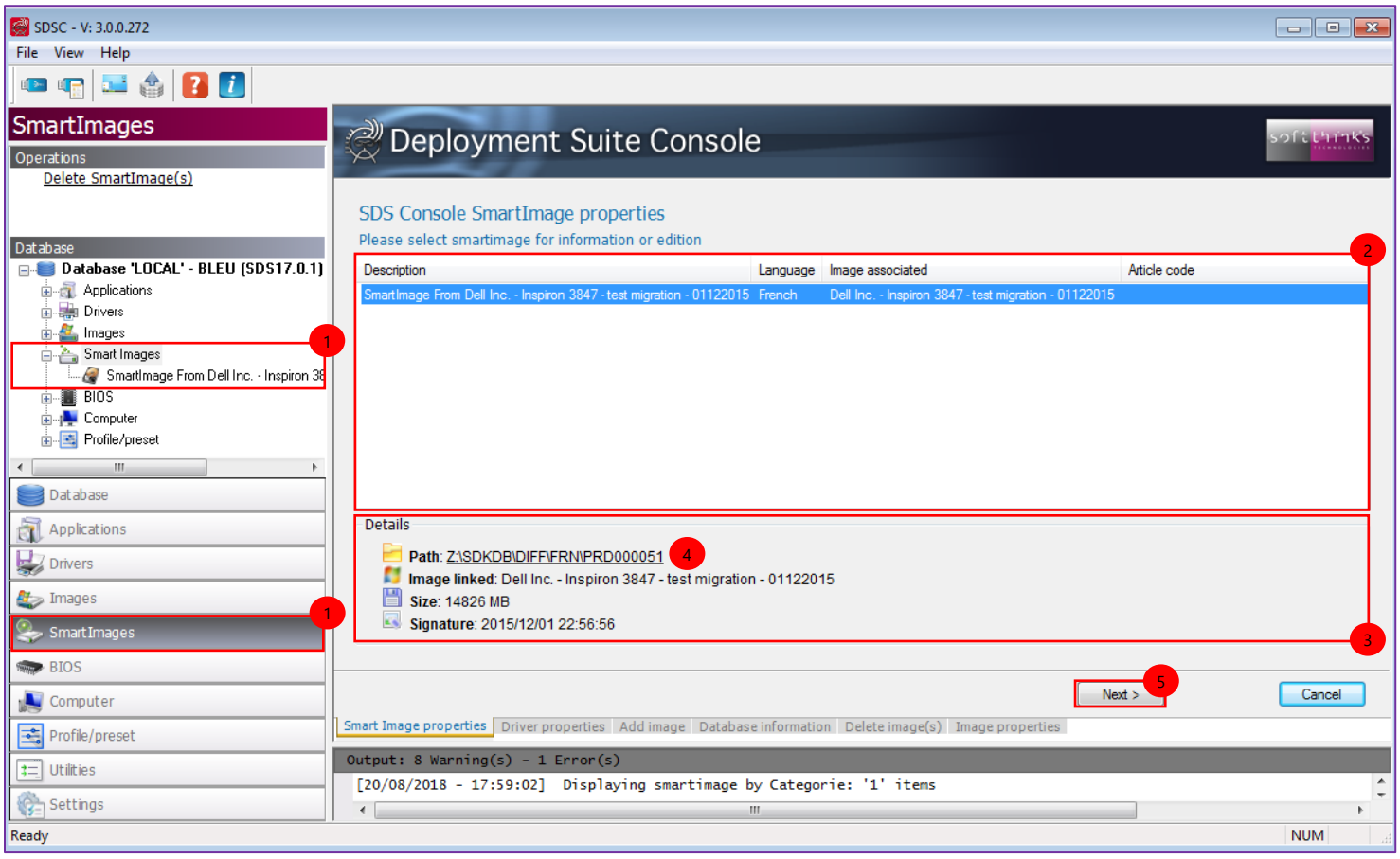
# Smart Images

SmartImages are differential images which reflect the difference between the basic Windows installation on a Generic Master and the fully configured target device. In general, they contain all items that were added on top of the basic Windows installation: PC-specific drivers, bundle software and applications.

SmartImages are fast to set up and can be very useful for installing configurations that change very rarely; i.e. notebooks or PCs with all-in-one motherboards.

To view and edit the SmartImages stored in the database, click on the « SmartImages » tab or on the "SmartImages" item in the Database tree-view (1).

When you select a Smart Image from the list (2), or directly from the tree-view (1), you can see its details below (3), including the location where it is stored (4) on which you can click to directly open this folder.

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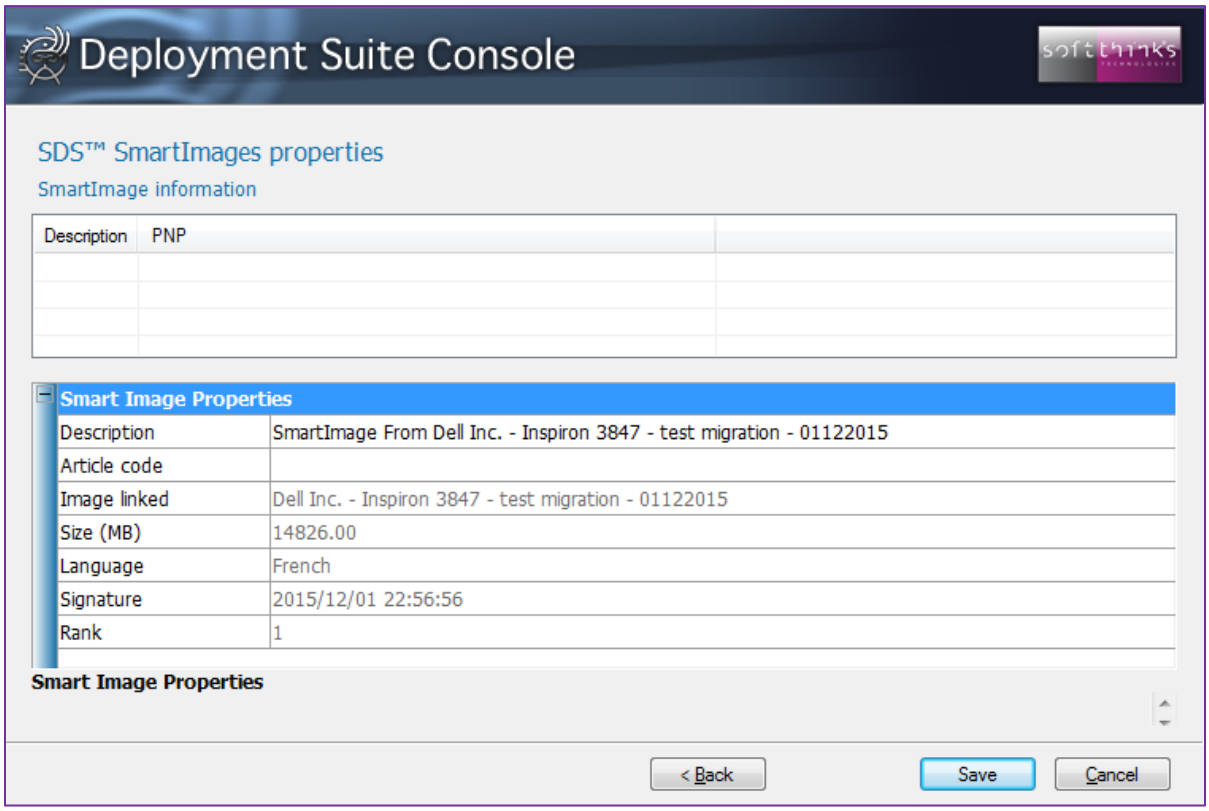
When you selected a SmartImage, click on the "Next >" button 5 (or double-click on it) to edit its properties as its description or to add more details (specific revision …) and click on the "Save" button to save your modifications:

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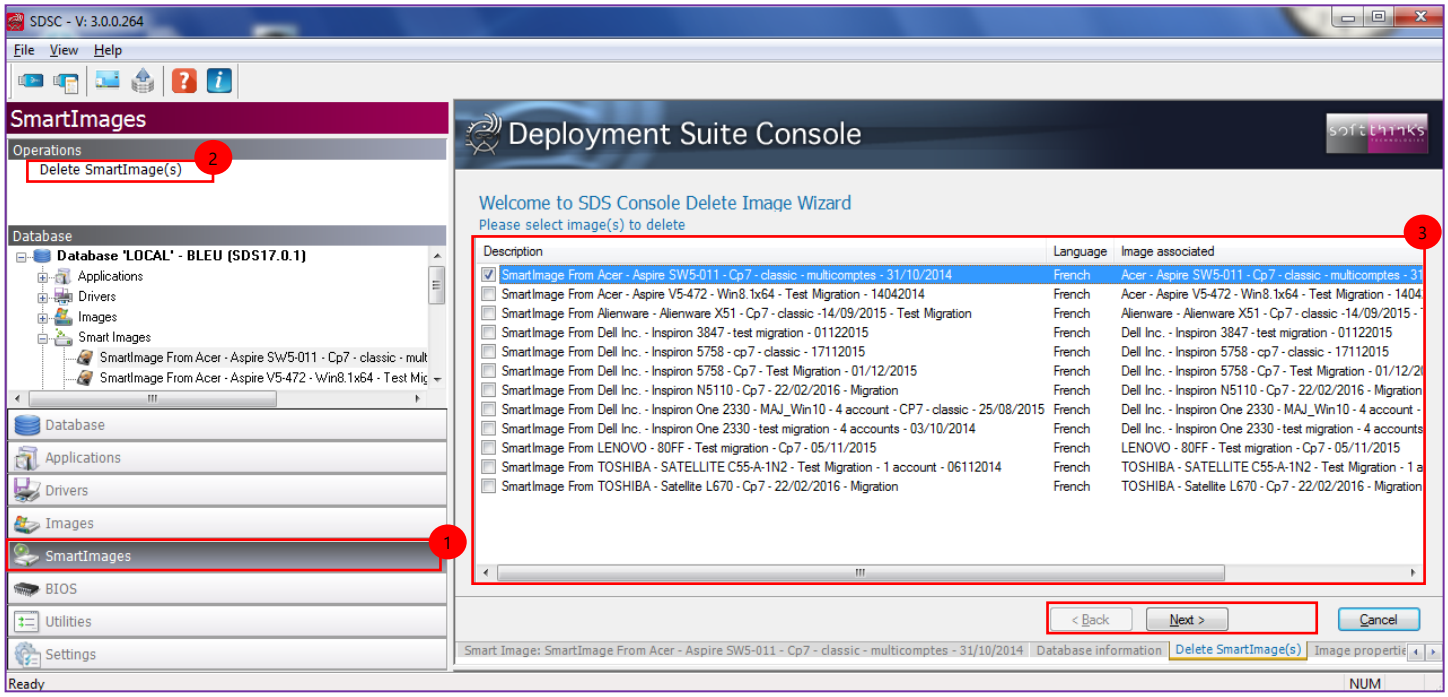
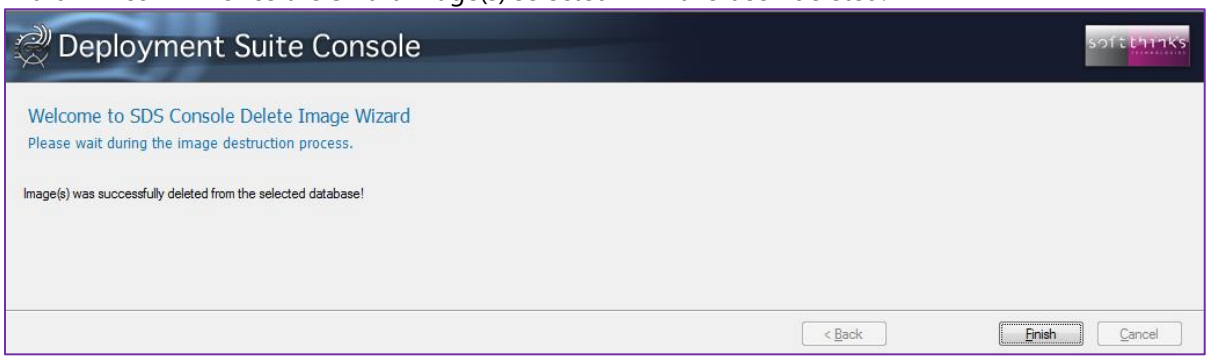
## Deleting SmartImage(s)

1. Click on the “SmartImages” tab (1)
2. Click on the “Delete SmartImage(s)” operation (2)
3. Select the images to delete by clicking the check box next to each image to be deleted (3). If you don’t see a SmartImage you recently added, press F5 to refresh the list contents.
4. Click on the “Next >” button (4)




5. The wizard will confirm once the Smart Image(s) selected will have been deleted:




**Note**: Deletion is permanent. There is no method to undo a delete. Be careful when selecting SmartImages for deletion and review them.

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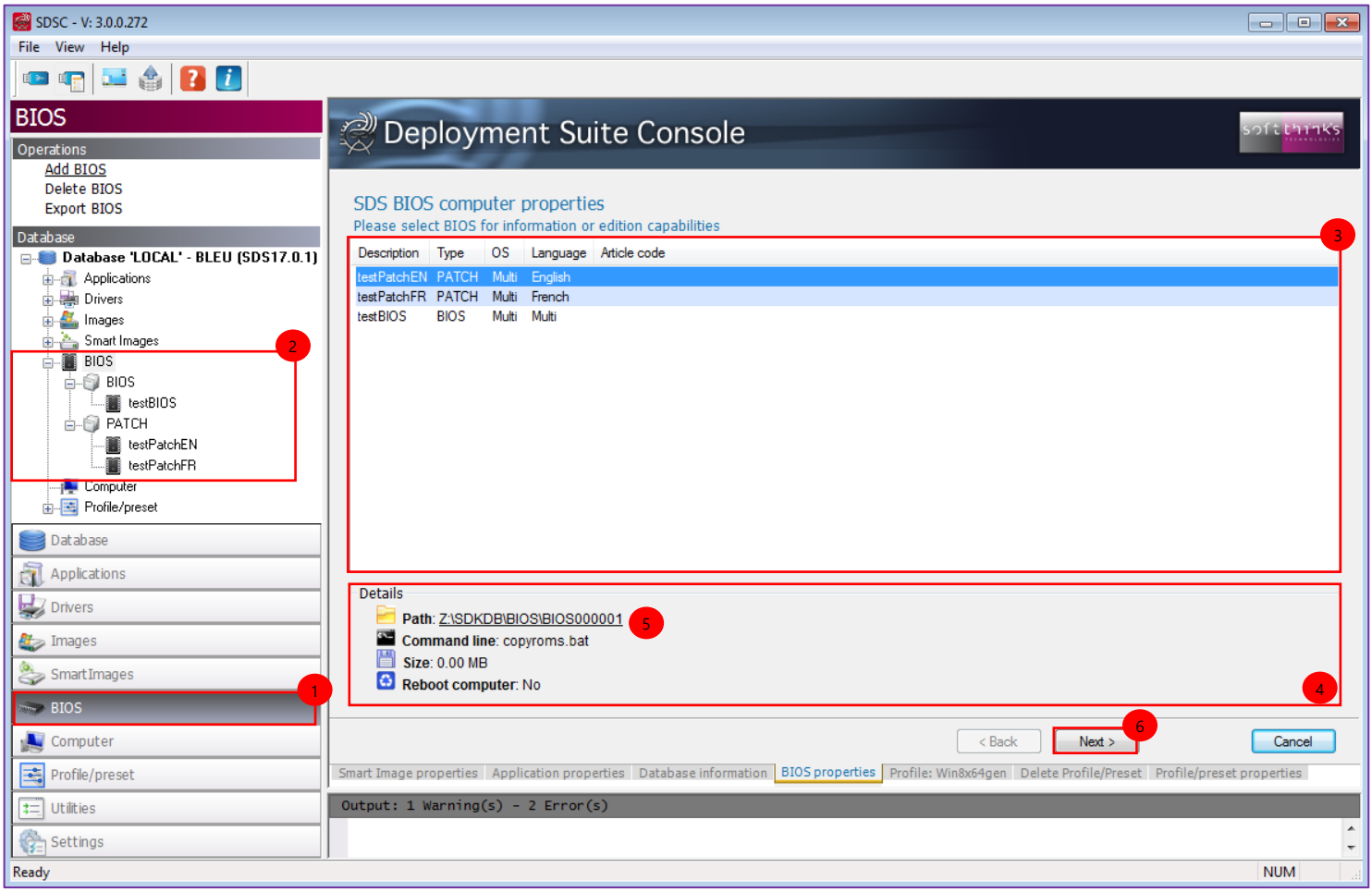
# BIOS

BIOS components are like application packages except that they are executed when the system is first booted to the deployment server and Deploy_JukeBox.exe is launched.

If Deploy_JukeBox.exe finds any components that are specified in the <profile>.selector.ini file, those components are executed prior to deployment or factory diagnostics. The BIOS components must be 32-bit applications and must be compatible with the WinPE environment. Any operation that must occur before the beginning of deployment could be done using this feature. It was primarily designed to allow electronic assembly (BIOS flash, DMI flash, firmware updates, and PATCH (SDS18.0)) prior to factory diagnostics and deployment.

You can explore the BIOS Components of your database by clicking on the "BIOS" tab 1, or directly on the "BIOS" object in the tree-view 2 :




When you select a BIOS Component in the list 3, you will see all of its details below 4, including its path that you can open by clicking on the link 5.

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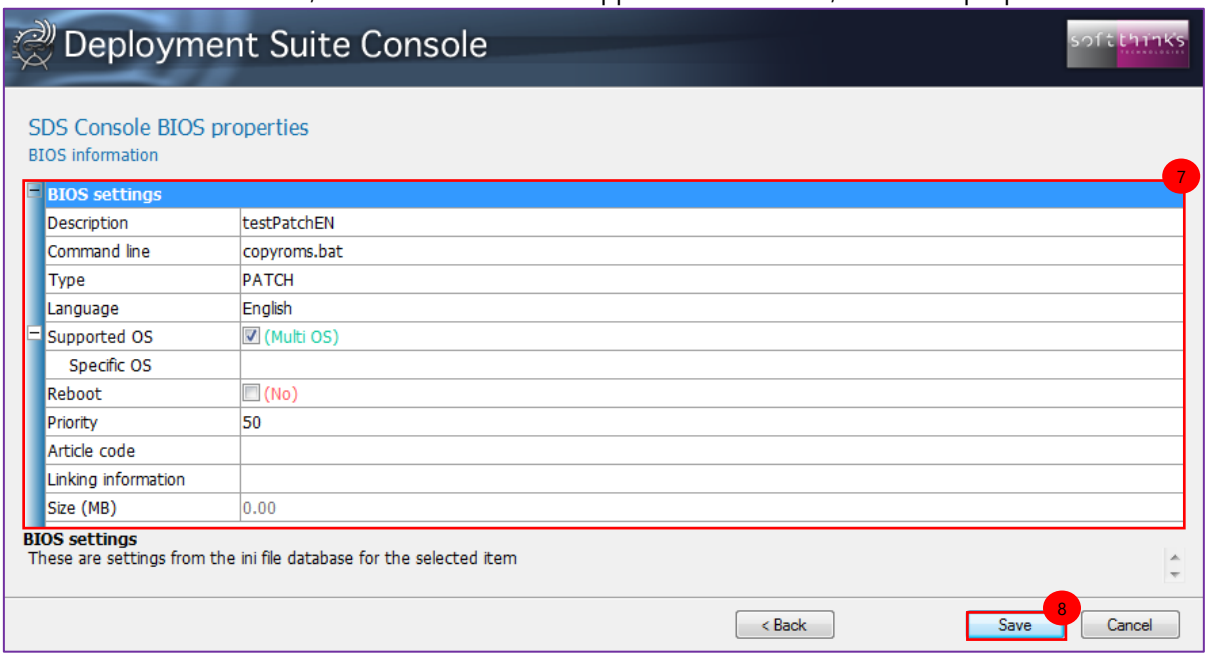
Click on the "Next >" button (6), or double click on the application in the list, to edit its properties:




- **Description:** BIOS component description
- **Command Line:** Full command line used to start the component (executable and command line arguments). **Note**: This differs from the application interface where executable and command line were different fields
- **Type:** Category of the BIOS component (BIOS, Firmware, DMI utility, PATCH, etc...). The list of categories is configured using the Settings tool (See BIOS settings)
- **Language:** Language supported by the BIOS component. Only used by PATCH components during deployment.
- **Supported OS:** OS for which the BIOS component can be applied. Only used by PATCH components during deployment.
- **Reboot:** Select this setting to reboot the computer after the component is executed. If there are additional BIOS components at a lower priority, they will be executed after the system boots back to the deployment server.
- **Priority:** Ranging from 0 to 99, all applications are arranged in <profile>.selector.ini file and execute them in ascending priority value. The lowest number, 0, goes first. Useful if more than one BIOS version is required to be installed.
- **Article Code:** The part number used in the SPL file to designate the BIOS component. (Not commonly used.)
- **Linking information:** String linking the BIOS component to an image, a PNP or a Motherboard model. By this way, the BIOS component can be filtered automatically if this information is matching during the deployment.
- **Size (MB):** Size of the BIOS Component folder

Click on the "Save" button (8) to complete the changes

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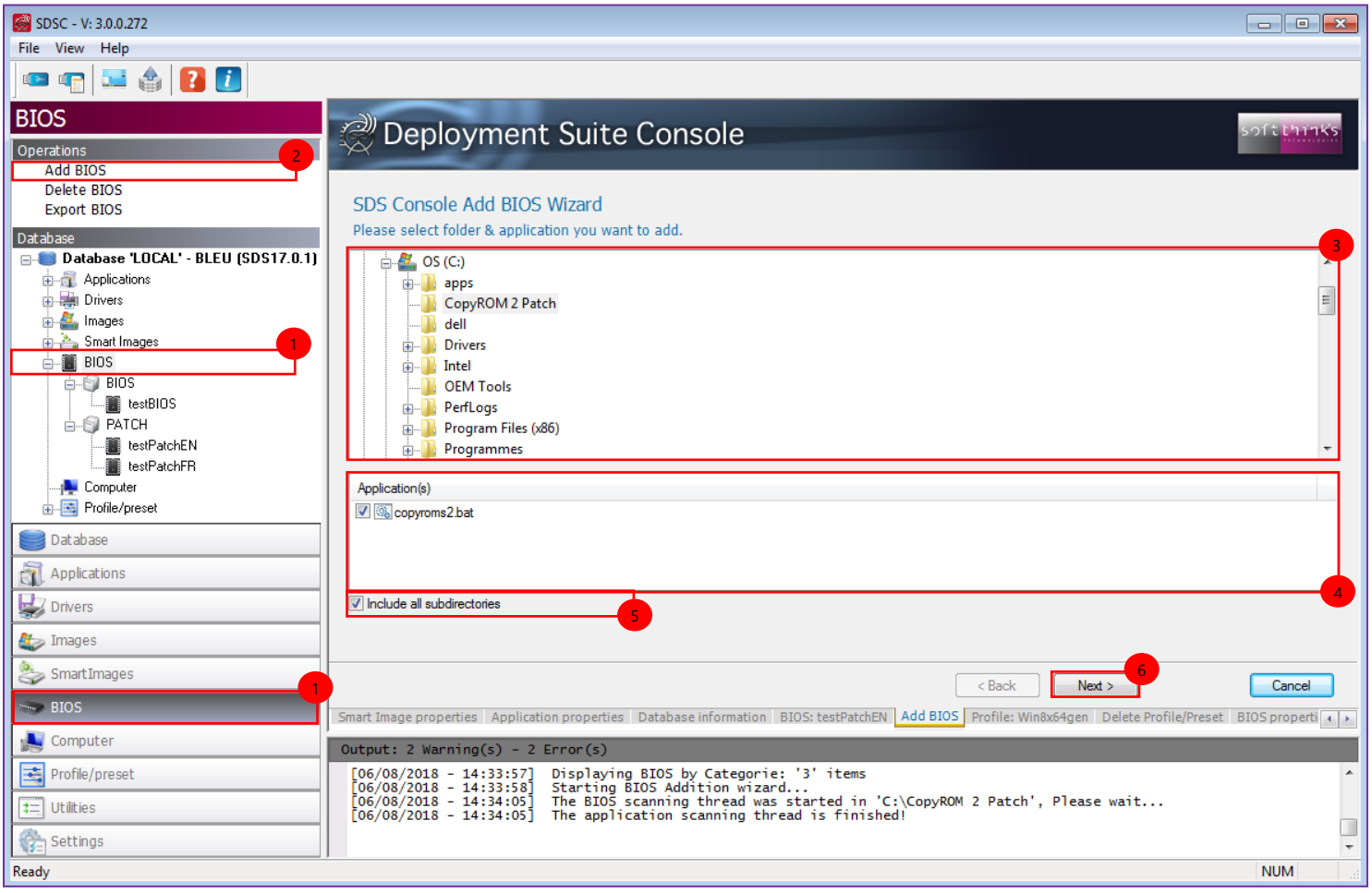
## Adding a BIOS component (“Add BIOS” operation)

1. Click on the “BIOS” tab (1) or BIOS element (1) in the database tree-view
2. Click on « Add BIOS » operation (2)
3. Select the location where your BIOS components are stored from the tree-view (3)
4. Check the application(s) in the list below (4)
5. Check the “Include all subdirectories” option (5) if there are subfolders inside your source folder that are required by the BIOS component. Else, only the folder selected in tree-view will be read
6. Click on the “Next >” button (6)

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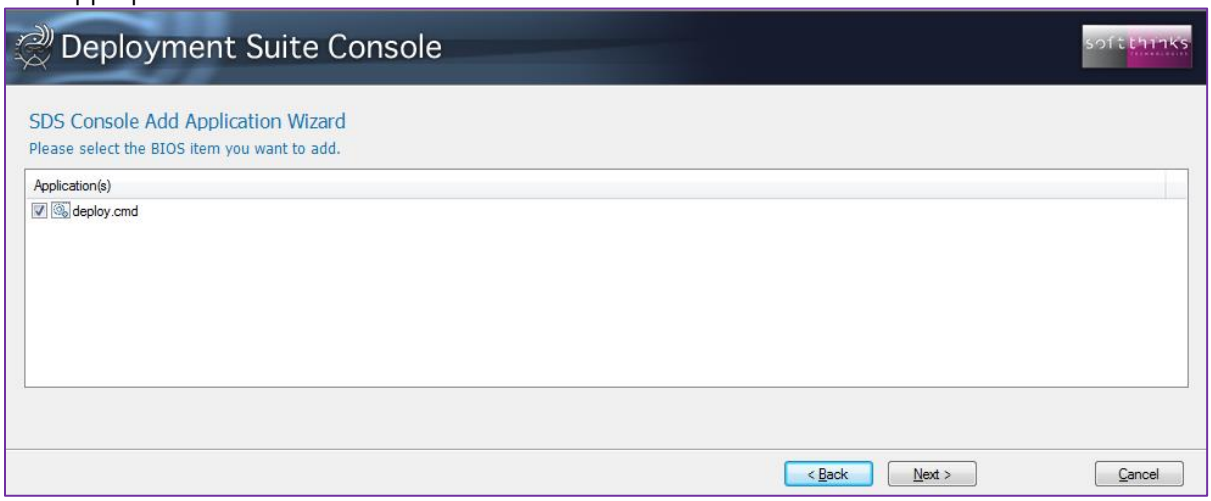
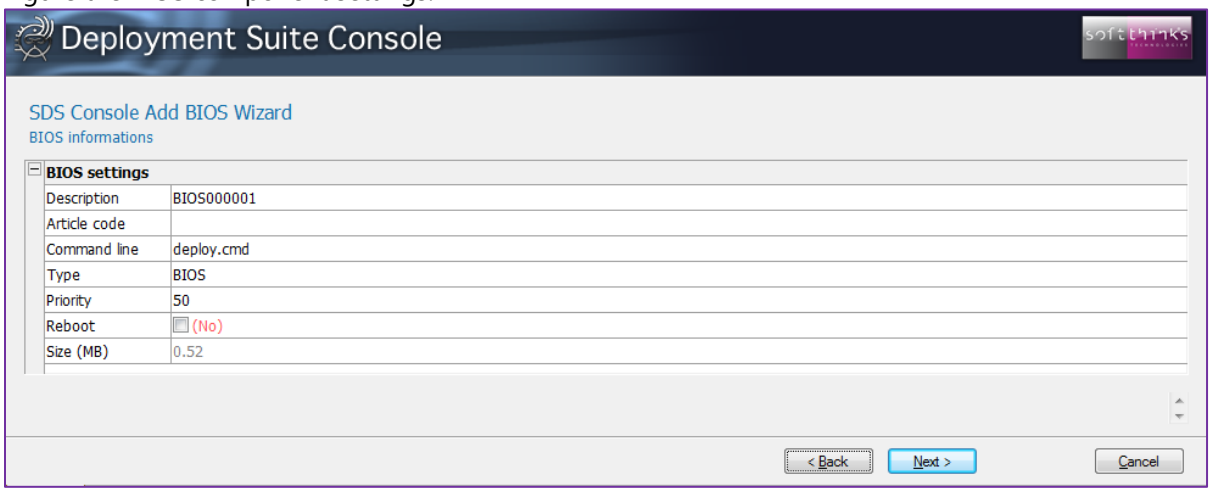
7. Pick the appropriate file from the list of executable files and click “Next>”:




8. Configure the BIOS component settings:




- **Description:** A text description of the BIOS component.
- **Article Code:** The part number used in the SPL file to designate the BIOS component. (Not commonly used.)
- **Command Line:** Contains the executable and command line switches. **Note**: This differs from the application interface where executable and command line were different fields.
- **Type:** Category of the BIOS component (BIOS, Firmware, DMI utility, etc). The list of categories is configured using the Settings tool (See BIOS settings)
- **Priority:** Ranging from 0 to 99, all applications are arranged in <profile>.selector.ini file and execute them in ascending priority value. The lowest number, 0, goes first. Useful if more than one BIOS version is required to be installed.
- **Reboot:** Select this setting to reboot the computer after the component is executed. If there are additional BIOS components at a lower priority, they will be executed after the system boots back to the deployment server.

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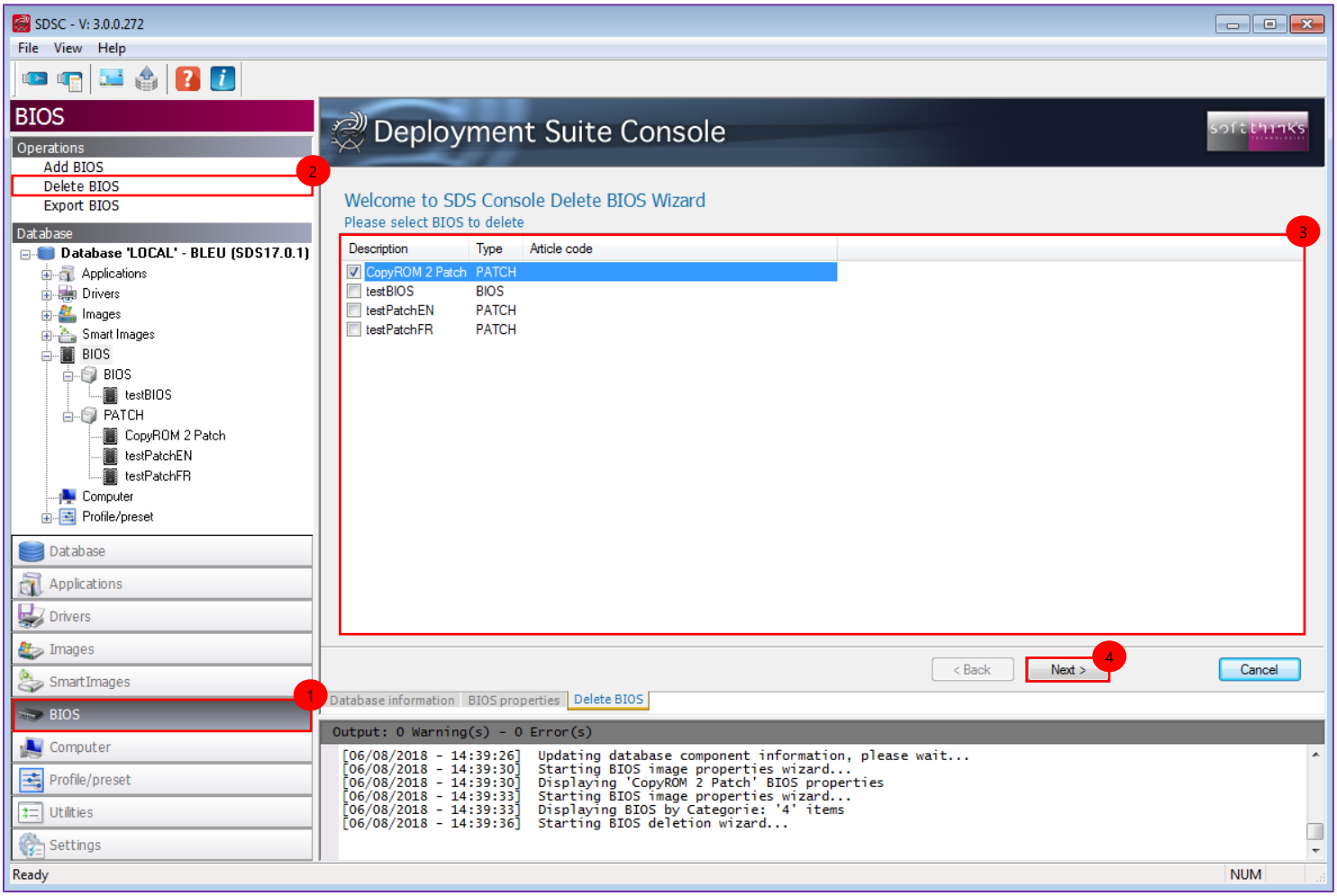
## Deleting BIOS components (“Delete BIOS” operation)

1. Click on the “BIOS” tab (1) or on the “BIOS” element in the Database tree-view
2. Click on the « Delete BIOS » operation (2)
3. Select all the BIOS components you wish to delete in the list (3). If you don’t see a component you recently added, press F5 to refresh the list contents.
4. Click on the « Next > » button (4) :




5. A message will confirm you when the BIOS components selected will have been deleted

**Note**: Deletion is permanent. There is no method to undo a delete. Be careful when selecting BIOS components for deletion and review them.

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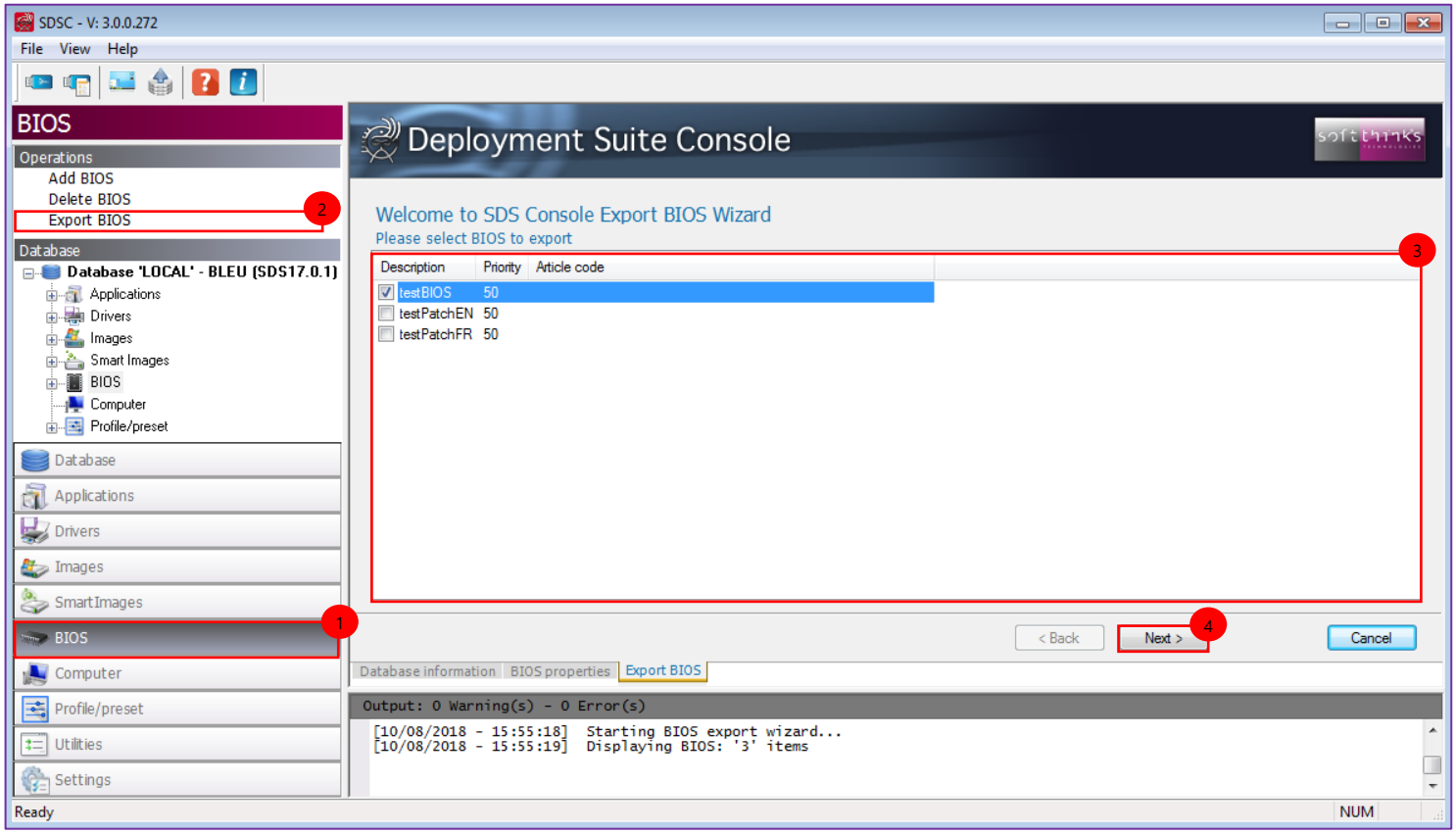
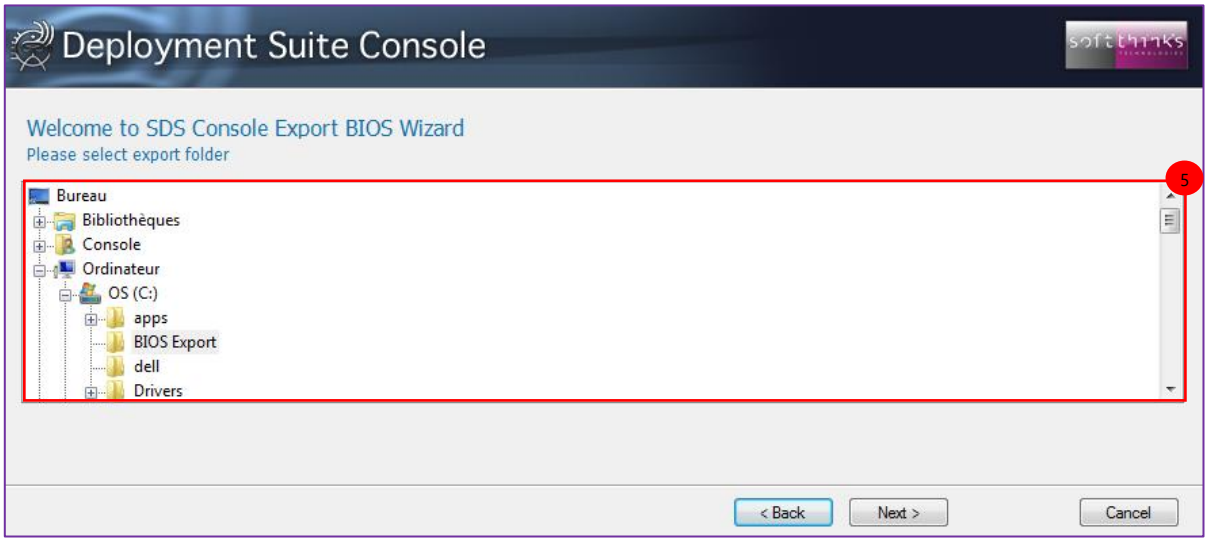
## Exporting BIOS components (“Export BIOS” operation)

1. Click on the “BIOS” tab (1) or on the “BIOS” element in the Database tree-view
2. Click on the « Export BIOS » operation (2)
3. Select the BIOS components you wish to export in the list (3). If you don’t see a component you recently added, press F5 to refresh the list contents.
4. Click on the “Next >” button (4)




5. Select the destination folder (5) where the ZIP files will be created and click on the “Next >” button

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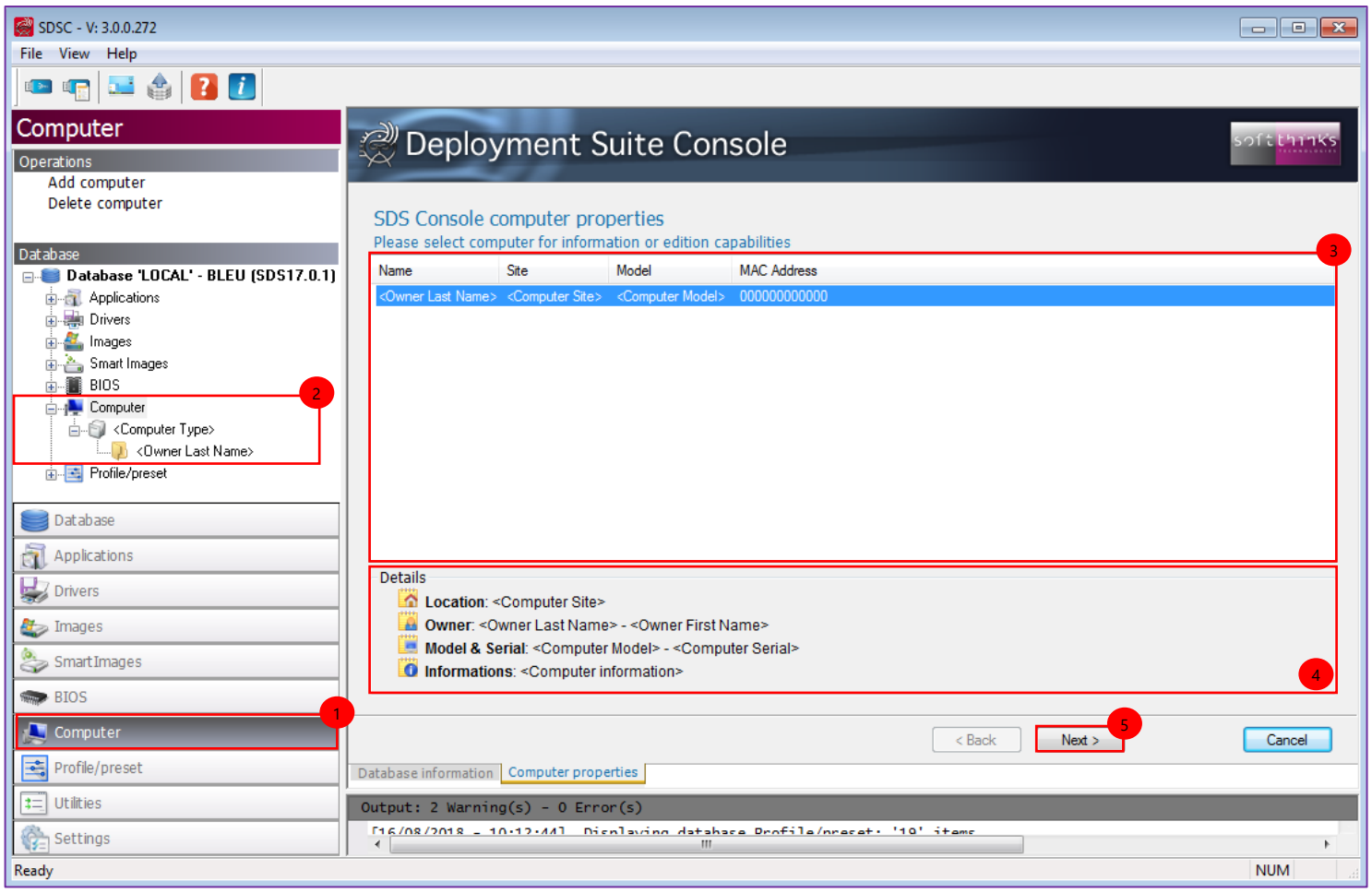
# Computer

This Database item allows computers management. By default, the associated view will be empty and no operation will be available. If you need this feature please ask to your contact at Softthinks.

When this feature is enabled, you can explore the Computers of your database by clicking on the “Computer” tab 1, or directly on the “Computer” object in the tree-view 2:




When you select a computer Component in the list 3, you will see all of its details below 4.

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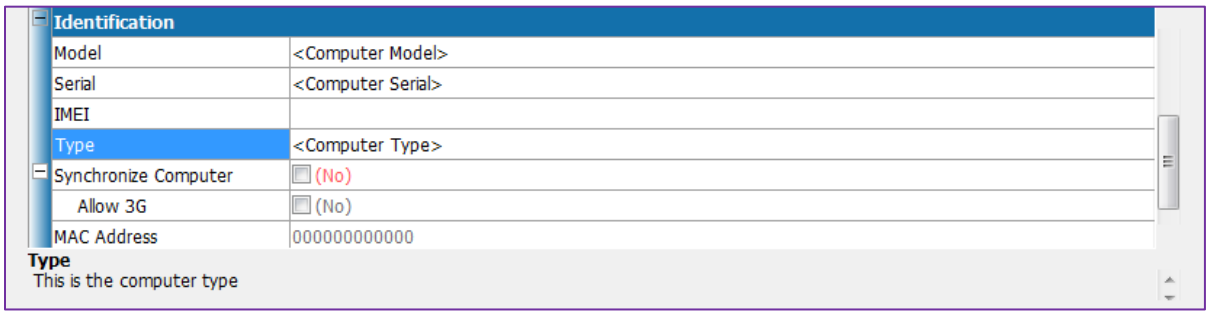
Click on the "Next >" button 5, or double click on the computer in the list, to view the history of the operations made on this computer 6 (click on the recycle bin icon at its right to clear this history log), and edit its properties 7, beginning with the "Owner" information:

- **Name:** Last name of the owner
- **First Name:** First name of the owner
- **Title:** Title of the owner
- **Site:** Computer location
- **Subsidiary/Company:** Subsidiary / Company of the owner
- **DOSI:** User computer information (IP / Comment / Color / any information you need to store)

Scroll down to edit the "Identification" information:




- **Model:** Computer model
- **Serial:** Computer serial number
- **IMEI:** Computer IMEI
- **Type:** Computer type
- **Synchronize Computer:** Synchronize the computer when connected
    - **Allow 3G:** Use the 3G connection if necessary to synchronize the computer
- **MAC Address:** Computer network card MAC Address

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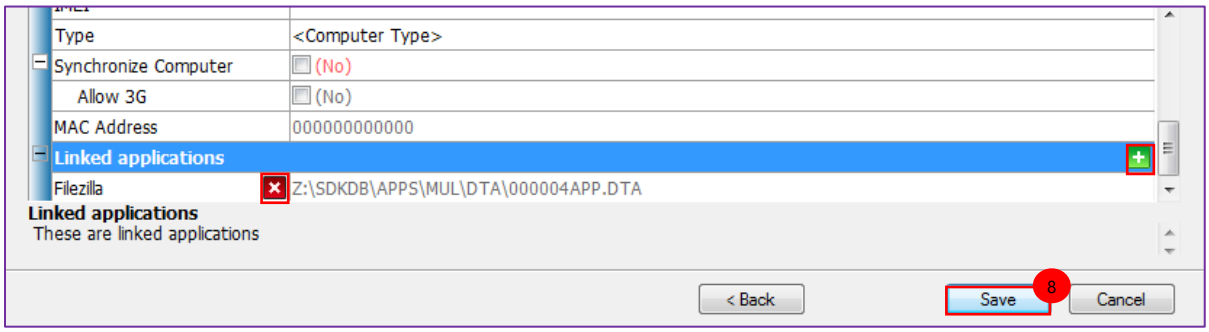
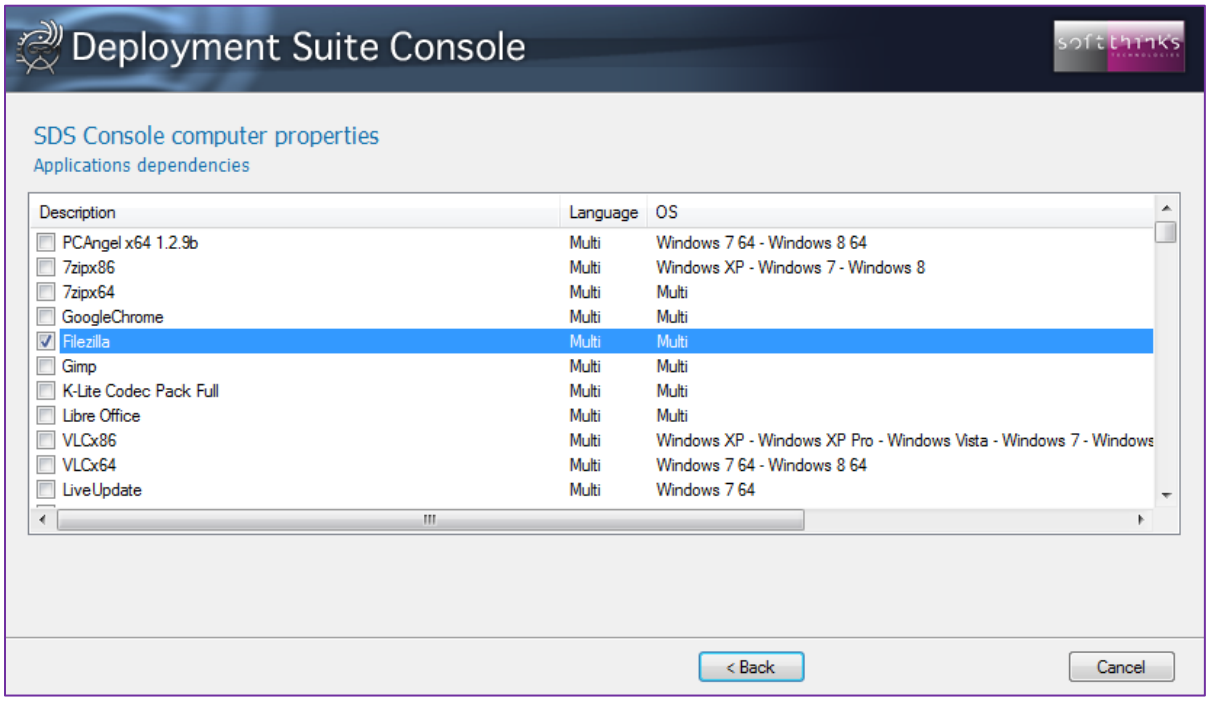
If you continue scrolling down you will see the applications linked to this computer:




Click on the button in front of the linked application you want to remove, and click on the button to add new linked applications from the list displayed (click on the "<Back" button to apply your selection or else on "Cancel" button):




Click on the Save button 8 to save your modifications.

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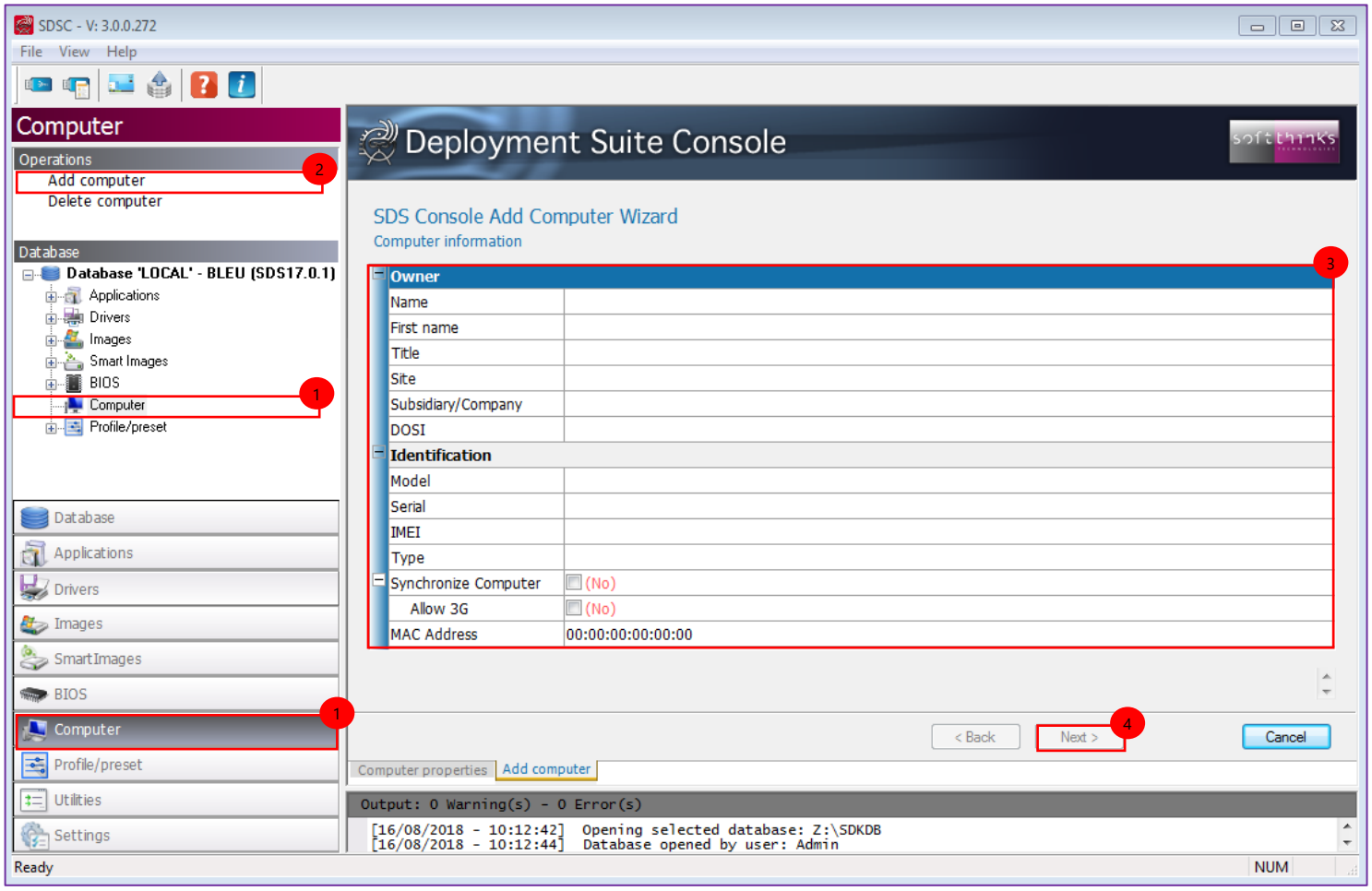
## Adding a computer (“Add computer” operation)

1. Click on the “Computer” tab (1) or Computer element (1) in the database tree-view
2. Click on “Add computer” operation (2)
3. Fill the computer information (3) (please refer to computer edition explanations just above)
4. Click on the “Next >” button (4)

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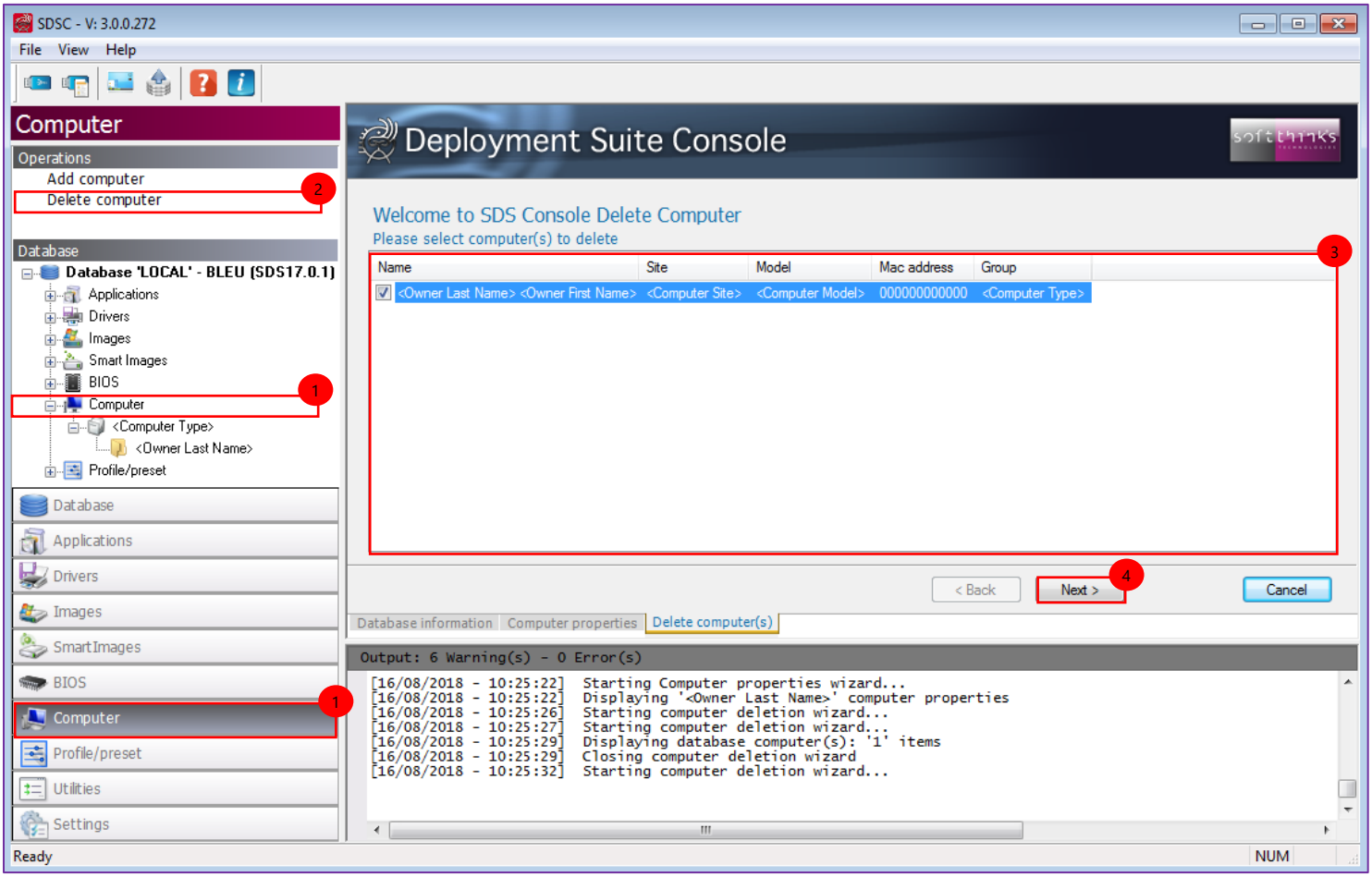
## Deleting a computer (“Delete computer” operation)

1. Click on the “Computer” tab (1) or Computer element (1) in the database tree-view
2. Click on “Delete computer” operation (2)
3. Select the computer(s) you want to delete from the list (3). If you don’t see a computer you recently added, press F5 to refresh the list contents.
4. Click on the “Next >” button (4)




5. A message will confirm you when the BIOS components selected will have been deleted

**Note**: Deletion is permanent. There is no method to undo a delete. Be careful when selecting BIOS components for deletion and review them.

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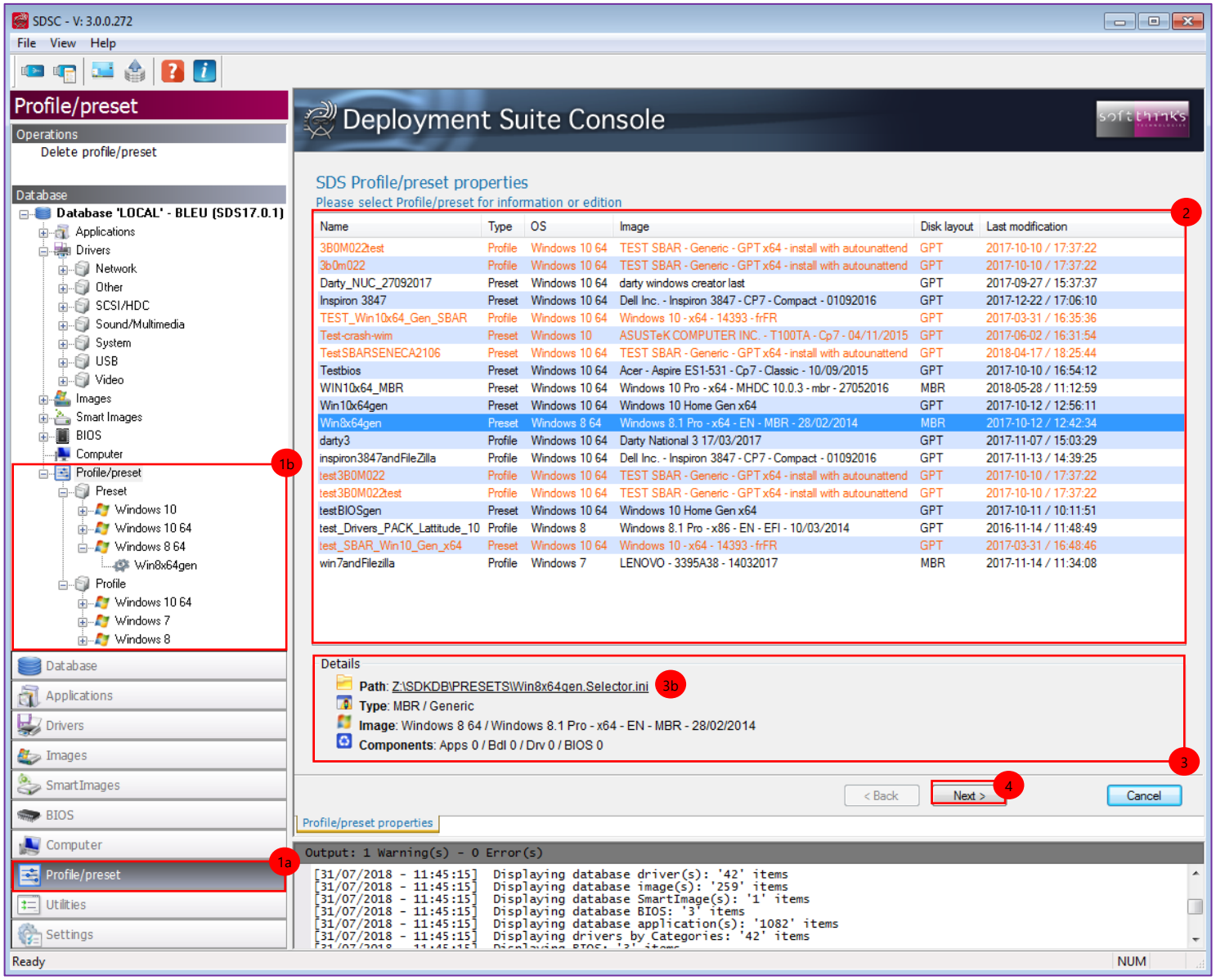
# Profile/Preset

This Database element has been introduced in SDS 18.0 in order to manage the profiles and presets created during deployment.

1. Click on the "Profile/Preset" tab 1a, or directly on the "Profile/Preset" object in the tree-view 1b:




2. Select the profile or preset in the list 3 you want to review or edit

   **Hint:** As for images, the number of profiles and presets is growing systematically and so the SDS Console highlights in orange the old ones to help you making some cleanup.

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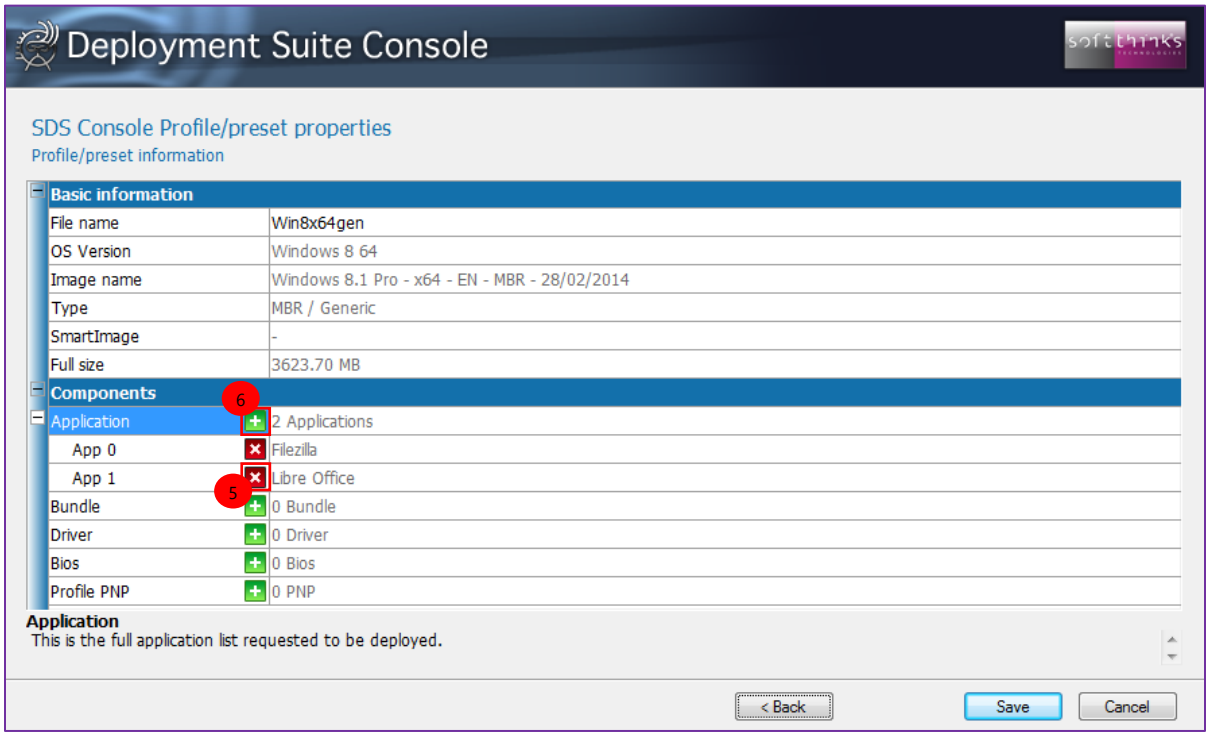
3. Review the information in the "Details" area 3, including the path where it is stored that you can open by clicking on the link 3b.

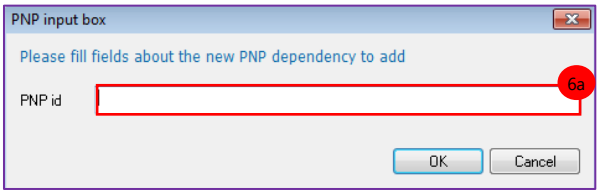
4. Click on the "Next >" button 4, or double click on item in the list, to edit its basic information and the components associated to it (2 applications in our example below):




5. Click on the button 5 in the front of an application / bundle / driver /BIOS / Profile PNP to unlink it.

6. Click on the button 6 in the front of a component category to add application / bundle / driver / BIOS / Profile PNP.

   a. For a Profile PNP, you will be asked to enter the PNP ID 6a:

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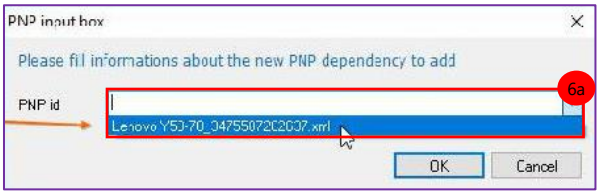
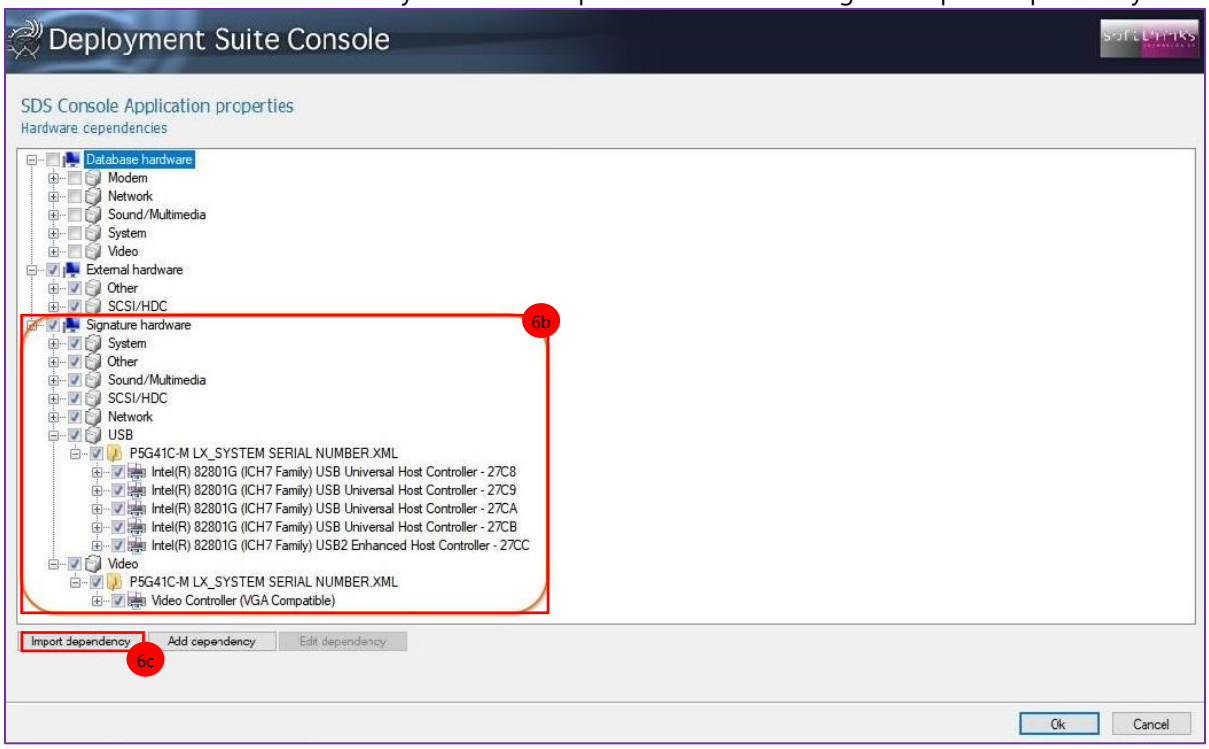
Or, since SDS 19.0, you can select a PNP definition file you have created previously through CTRL+F9 keystroke on the device 6a:




And then select the elements you want to import 6b before clicking on "Import Dependency" 6c:

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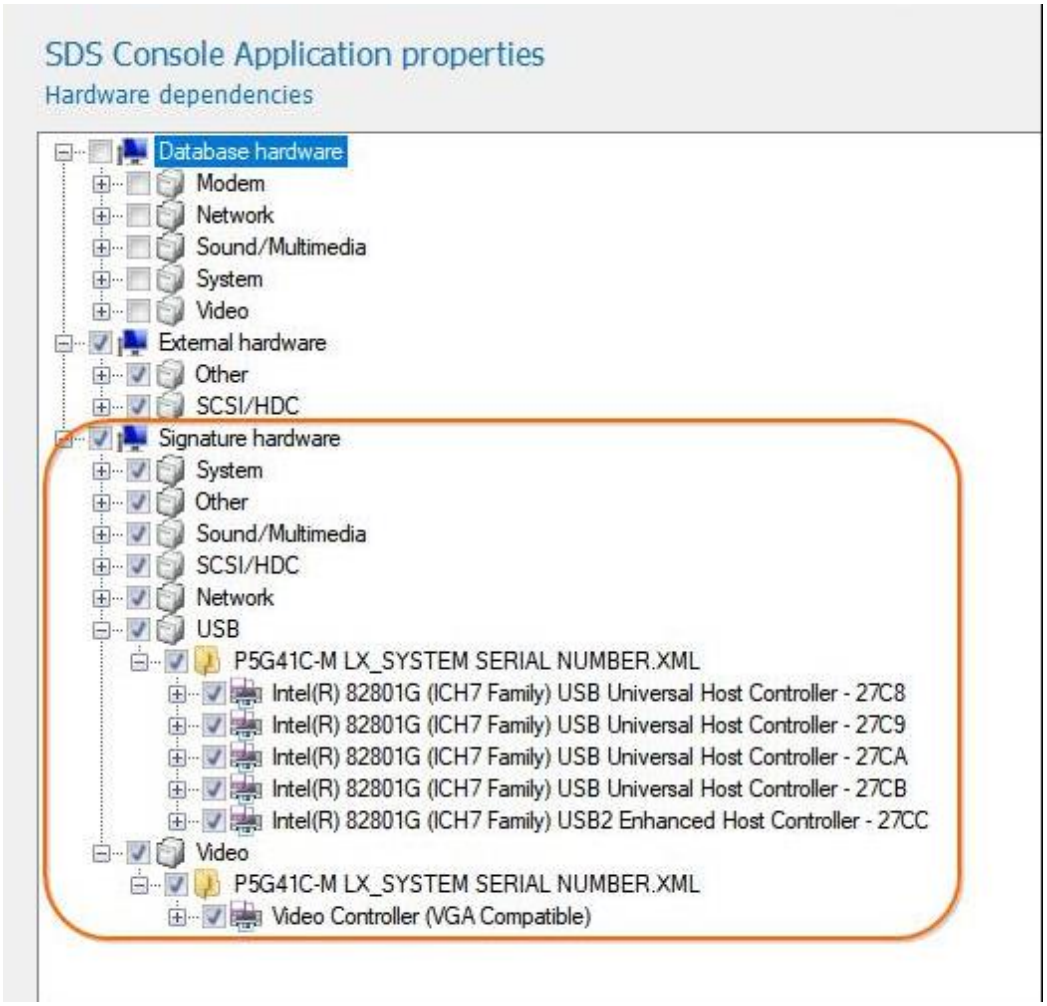


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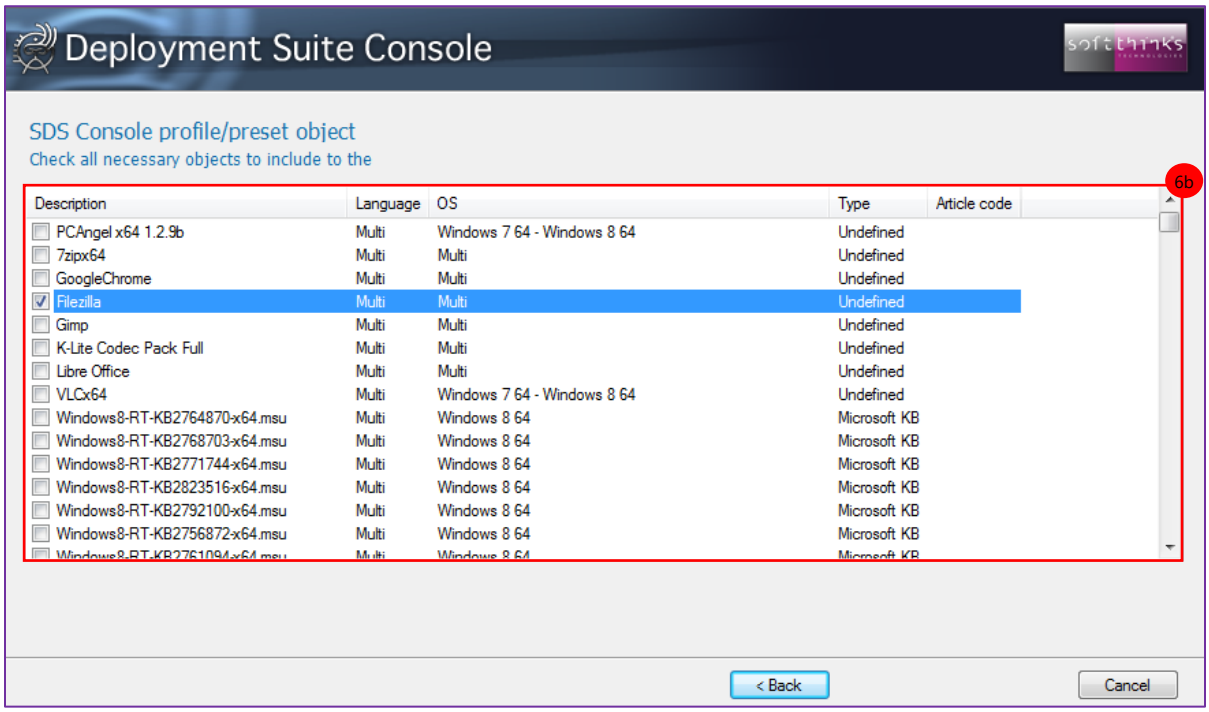
b. For any other type of component (such as application in our example below), you will be invited to select the elements you want to link from the list displayed 6a to the current profile/preset:




**Note:** The elements already linked appear as preselected (as “Filezilla” in our example). If you unselect them they will be removed from the list of the elements linked.

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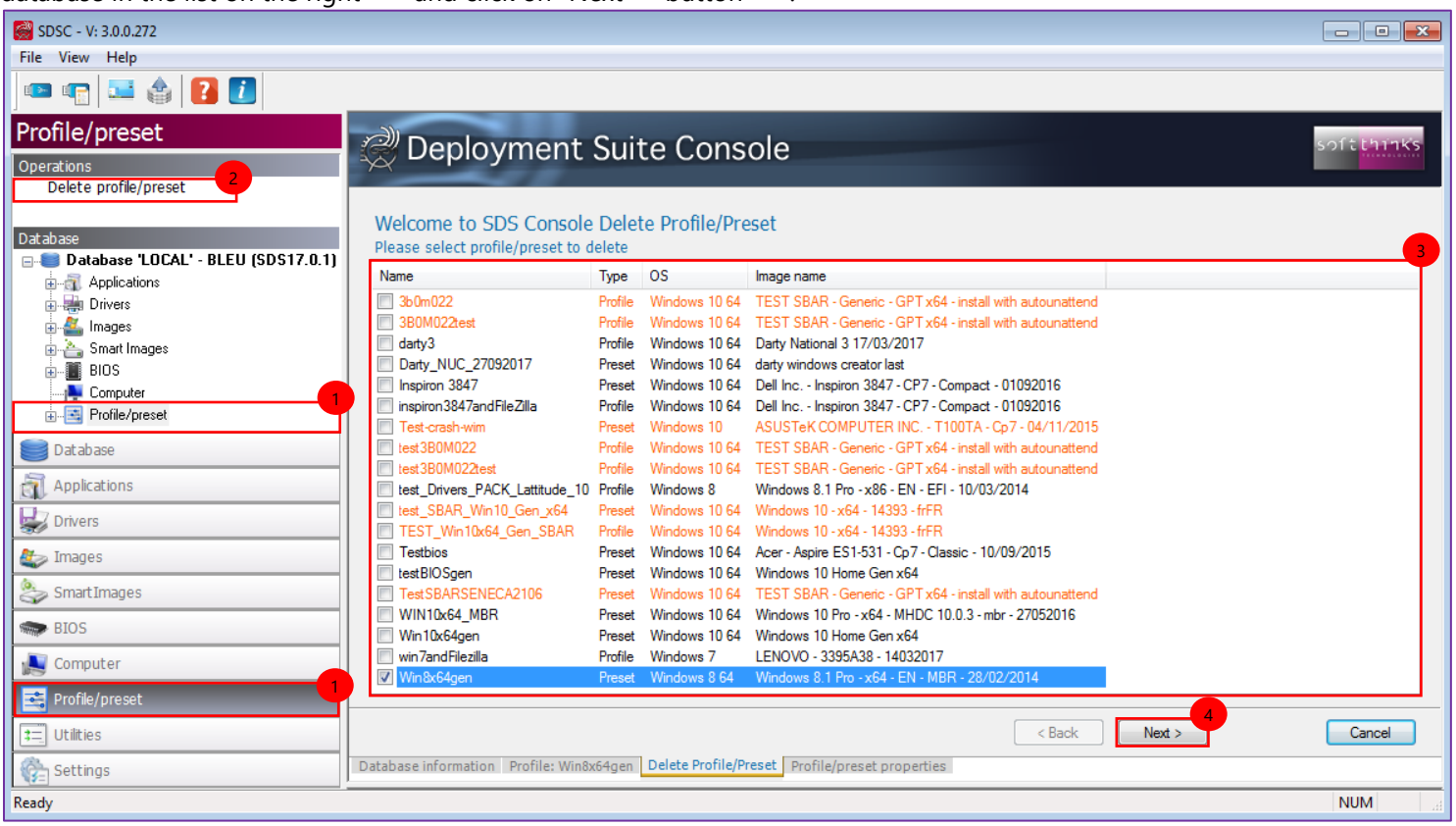
### Deleting a profile/preset (“Delete profile” operation)

In order to delete one or more profile/preset, click on “Profile/Preset” tab 1, or on “Profile/Preset” node 1 in the database arborescence, and then “Delete profile/preset” operation 2. Select the profile(s)/preset(s) you want to remove from the database in the list on the right 3 and click on “Next >” button 4:




The wizard will confirm you that your profile(s)/preset(s) have been deleted once the process has completed.

**Note**: Deletion is permanent. There is no method to undo a delete. Be careful when selecting applications for deletion and review them before continuing.

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# Utilities

## General

### Create Deployment USB stick

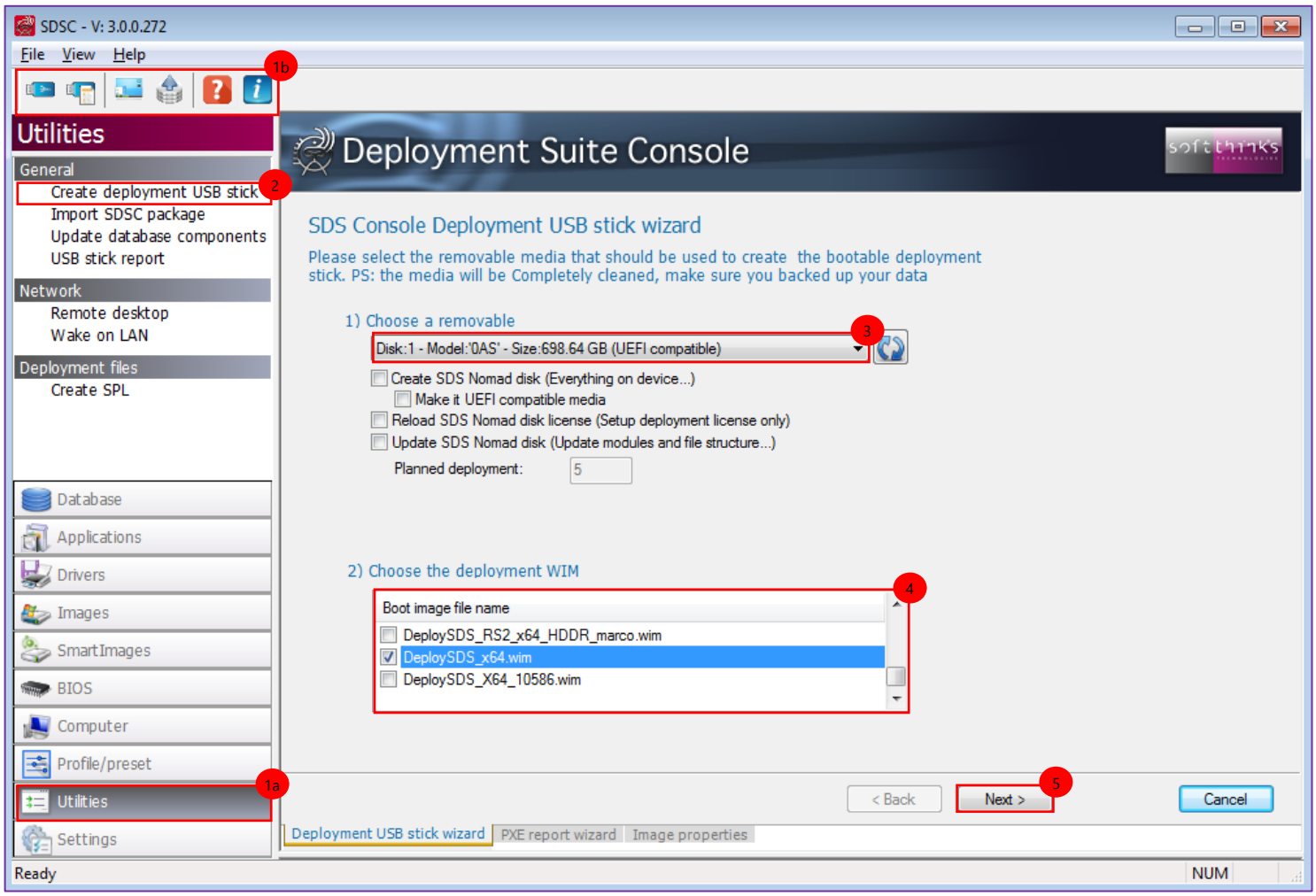
This tool offers you the ability to create a bootable deployment USB stick. If you already created one with a previous version of SDS, you will have to update it in order to benefit from all of the new SDS features and to be compliant with latest OS version.

You can either create a Boot Key or a Nomad Disk.

### Boot key

Create a boot key when you want to use SDS on a computer that doesn't support PXE boot.

1. Click on "Utilities" tab 1a, or directly on button in the toolbar 1b and go to step 3
2. Click on « Create deployment USB stick » operation 2




3. Insert a blank USB stick (See How to format a USB Flash Drive before converting it to a SDS USB Flash Drive to format it) or the USB stick previously created and select it in the list 3
4. Select the deployment image to use 4

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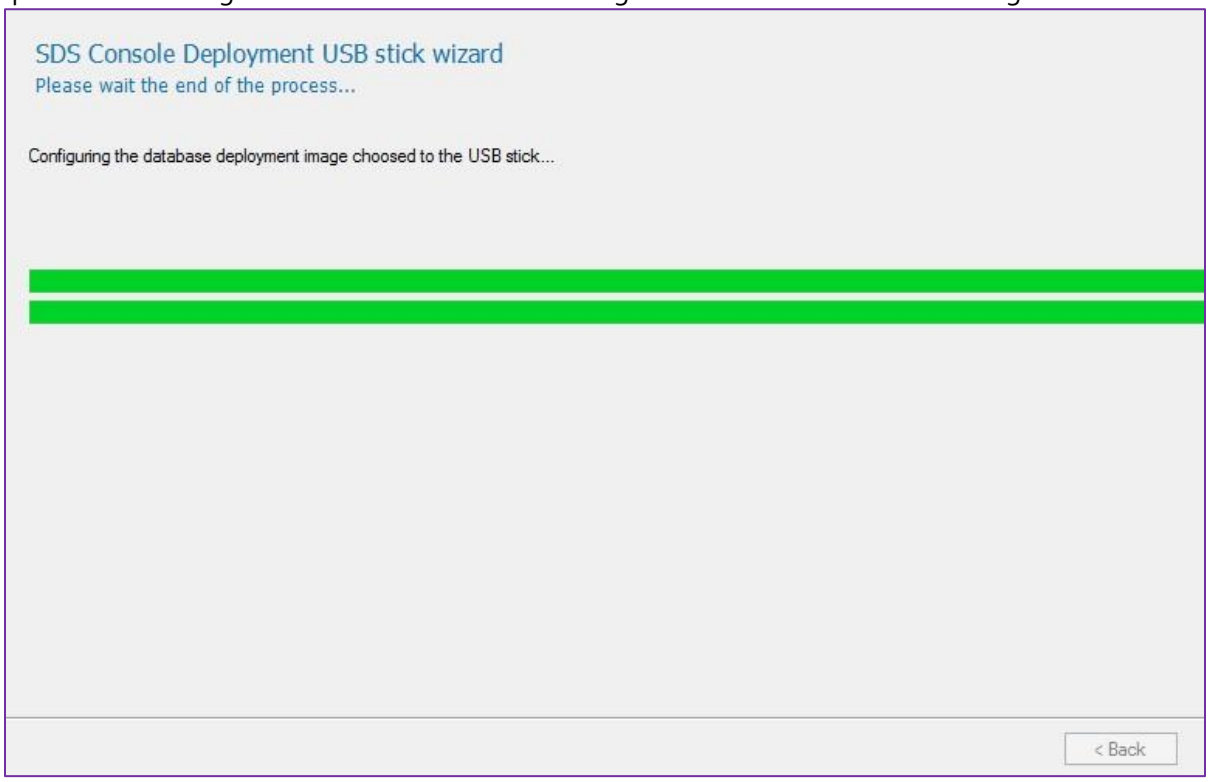
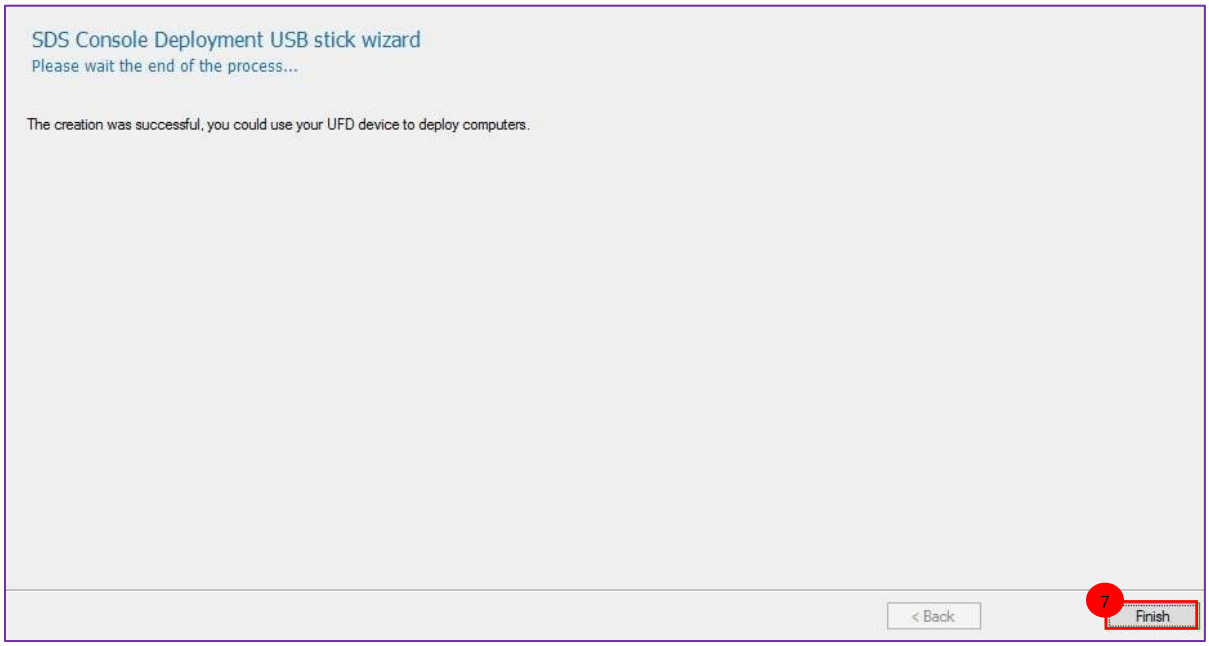
5. Click on “Next >” button 5
6. The process of creating the bootable flash drive can range from 2 to 10 minutes on average:




7. Once completed, click on « Finish » button 7:

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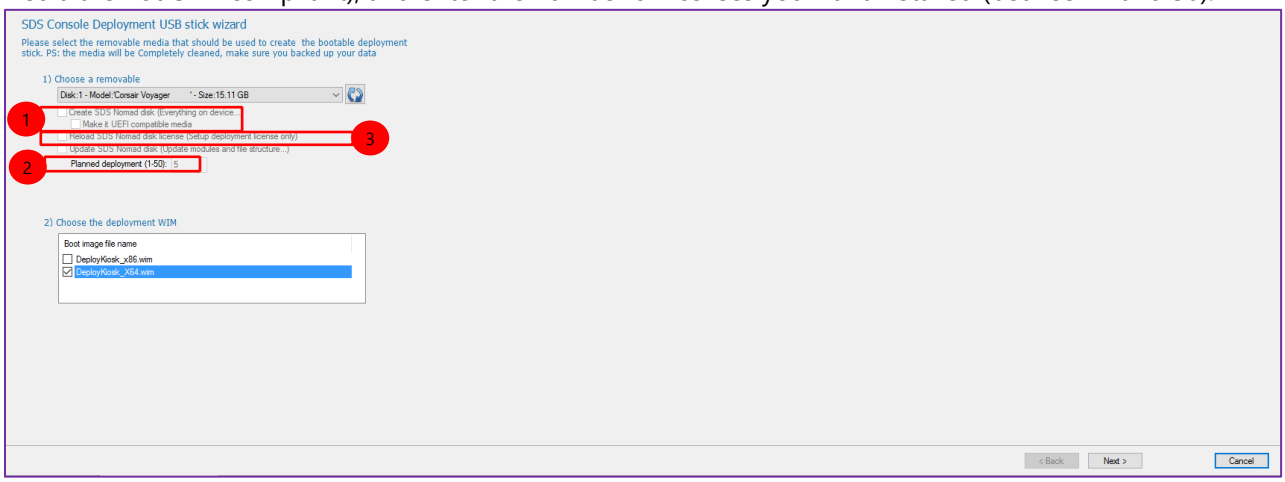
### Nomad disk

Instead of using a server, you install the software on an external hard drive that we call a Nomad Disk.

1. To create your Nomad Disk, follow the same process as for the Boot Key, except that you have to check the options « Create a SDS Nomad disk (Everything on device…) » and « Make a UEFI compatible device » (if needed since all USB media are not UEFI compliant), and enter the number of licenses you want installed (between 1 and 50):




**Note:** Do not use USB Hard Drive larger than 2TB.

2. When you will have reached the deployments limit on a **nomad disk**, you will get the message below and will be able to add more licenses by choosing "Reload SDS Nomad disk license" 3.

**Note:** You can check the number of deployment available by plugging your USB Stick into the server and selecting « **USB Stick Report** » (See USB stick report).

3. You can also update the components (in case of new SDS version) in your Nomad Disk through the "Update SDS Nomad disk" option 4:

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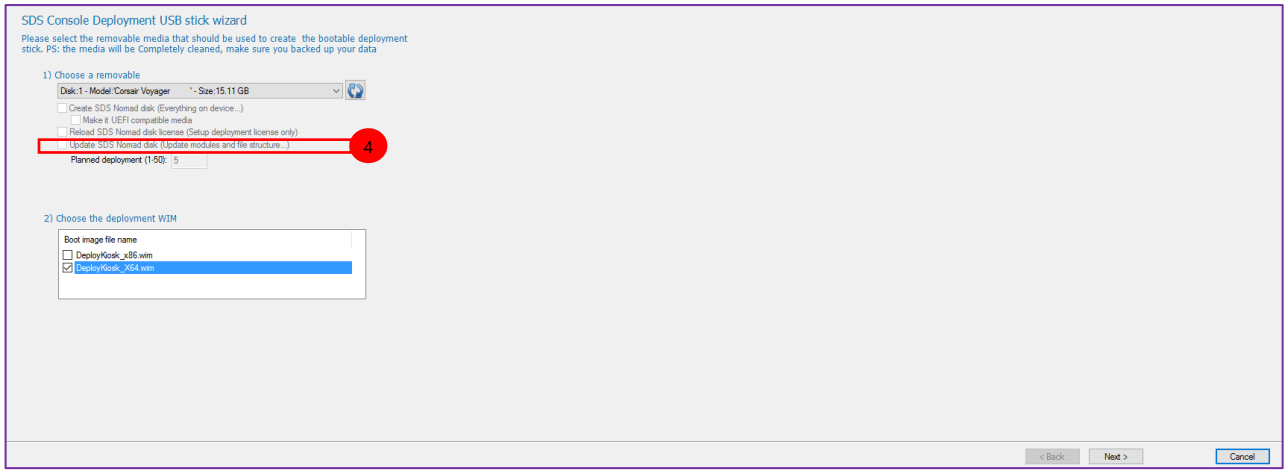


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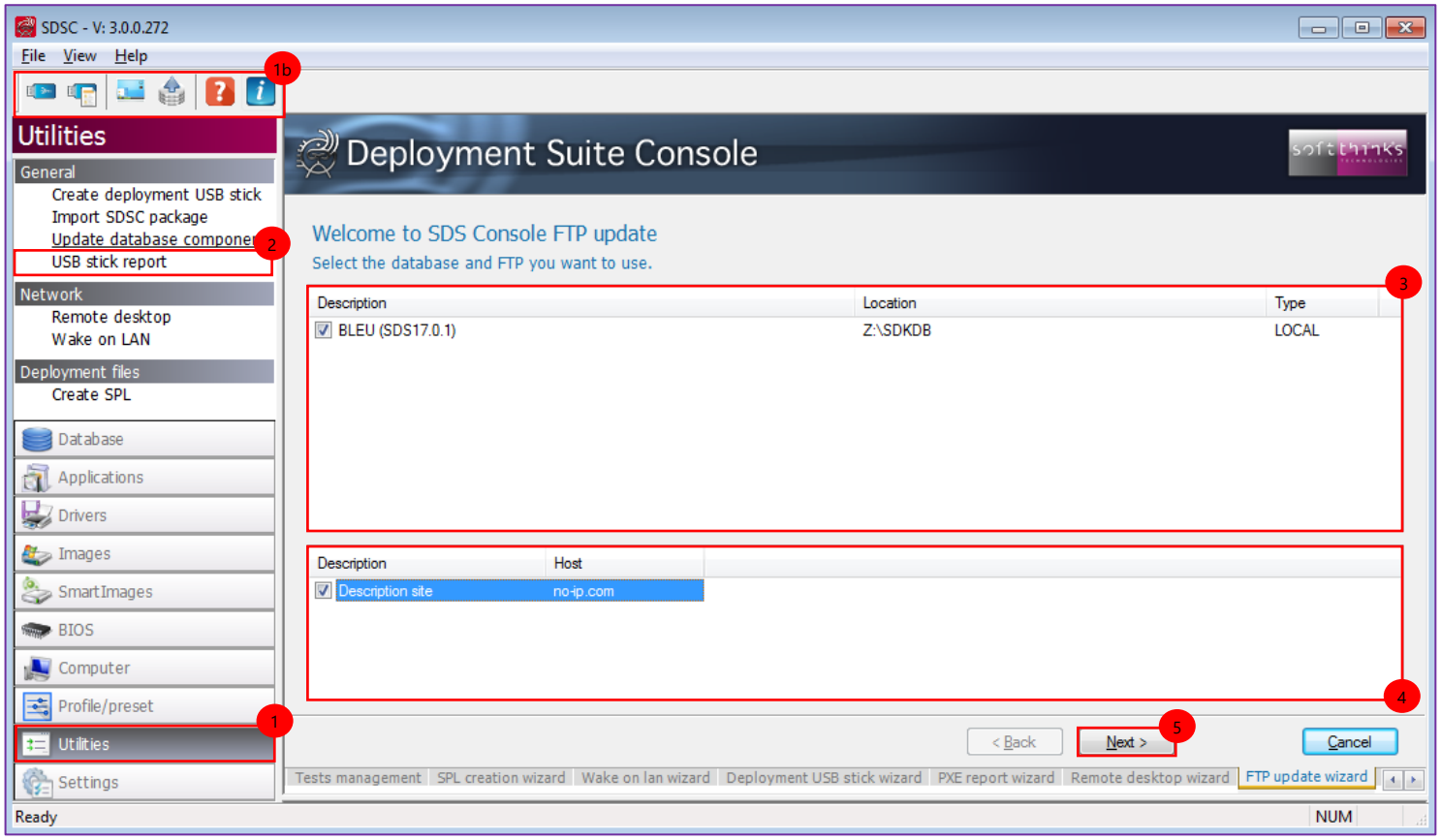
### Import SDSC package

This feature offers you the ability to import a package (applications and drivers packages typically) into the database. Please see Importing application(s) ("Utilities\Import SDSC Package").

### Update database components

This utility will update your database components from a FTP containing the reference database (See How to prepare the database for the "Update database components" feature).

1. Click on the "Utilities" tab (1), or directly on the button located in the toolbar (2b) and go to step 3
2. Click on the "Update database components" operation (2):




3. Choose the database you wish to update (3)
4. Select the FTP site where you put the reference database (4)
   **Hint:** The FTP sites are configured in Database settings
5. Click on the "Next >" button (5)

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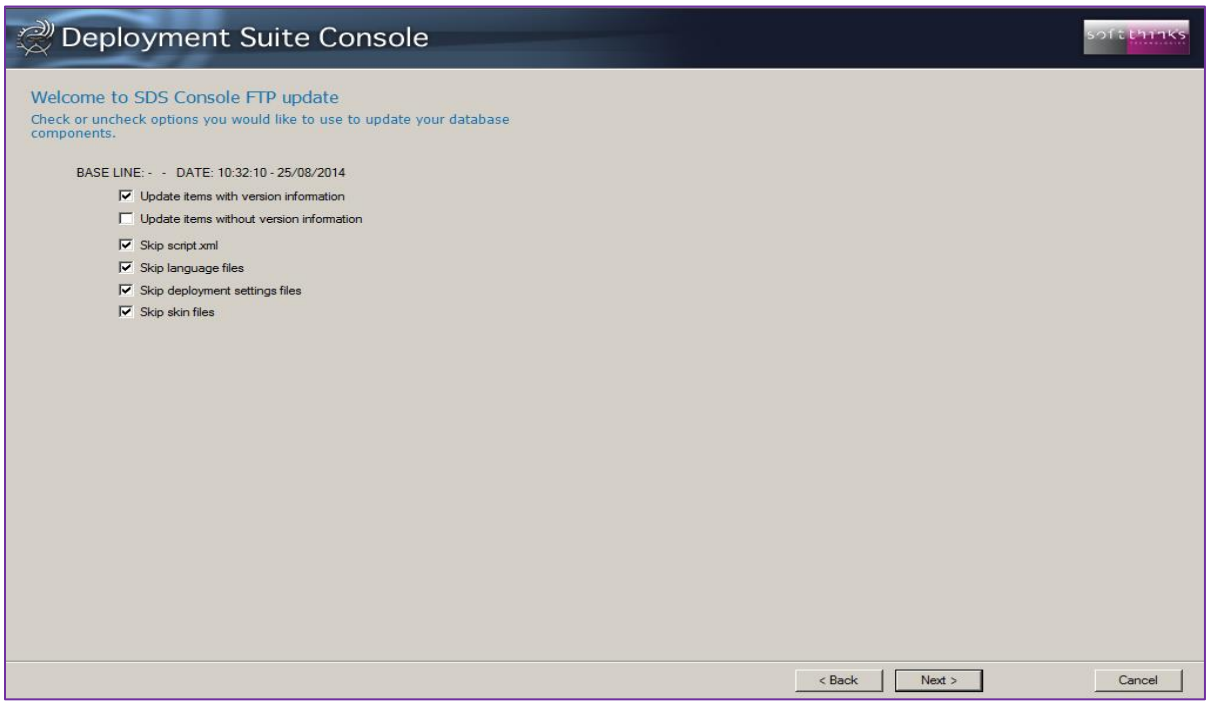
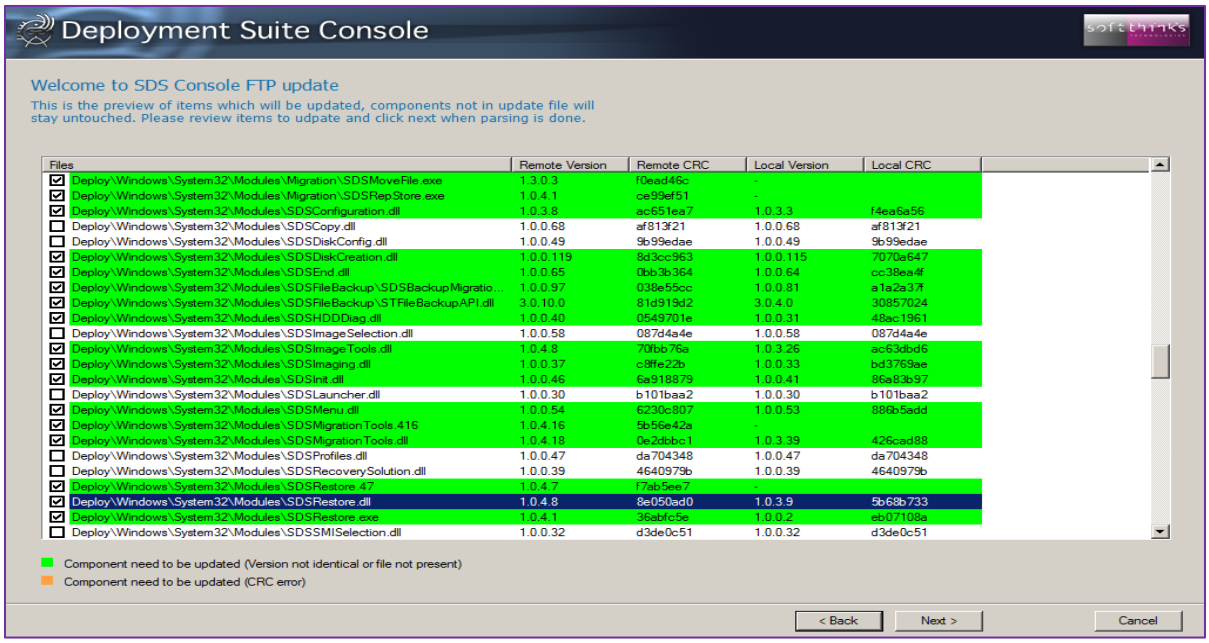
6. Select the components you wish to update:




7. Review and modify the files if necessary (checked and displayed with green background) which have been pre-selected based on your component selections from the previous step and click on the "Next >" button:

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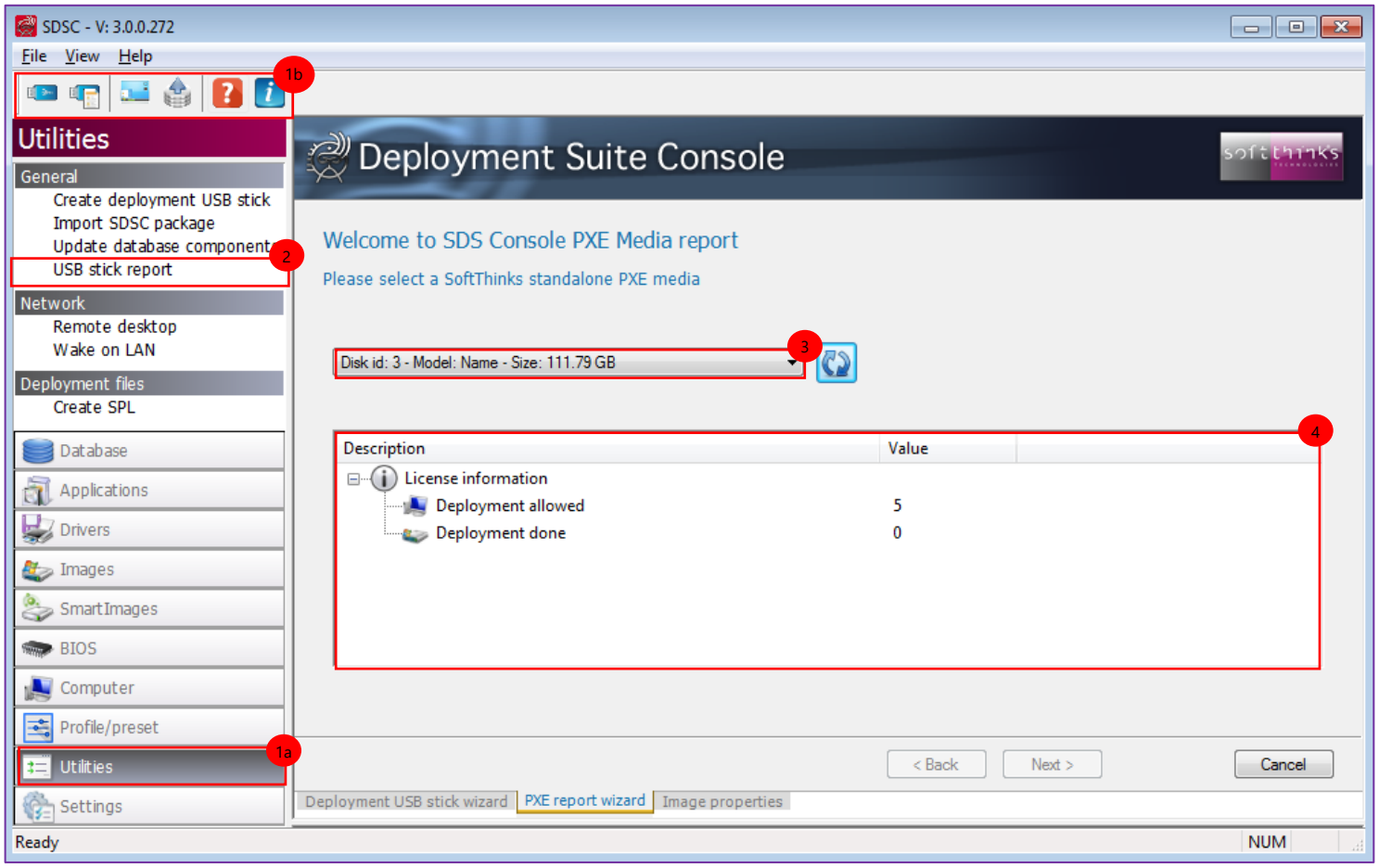
## USB stick report

Use this utility to check the number of deployments available on a Nomad Disk.

1. Click on the "Utilities" tab 1a, or click directly on the button in the toolbar 1b and go to step 3
2. Click on the "USB stick report" operation 2




3. Insert your Nomad Disk, if it is not yet the case, and select it in the list 3. If your Nomad Disk doesn't appear in the list, click on the button to refresh the list.
4. Check the license information 4

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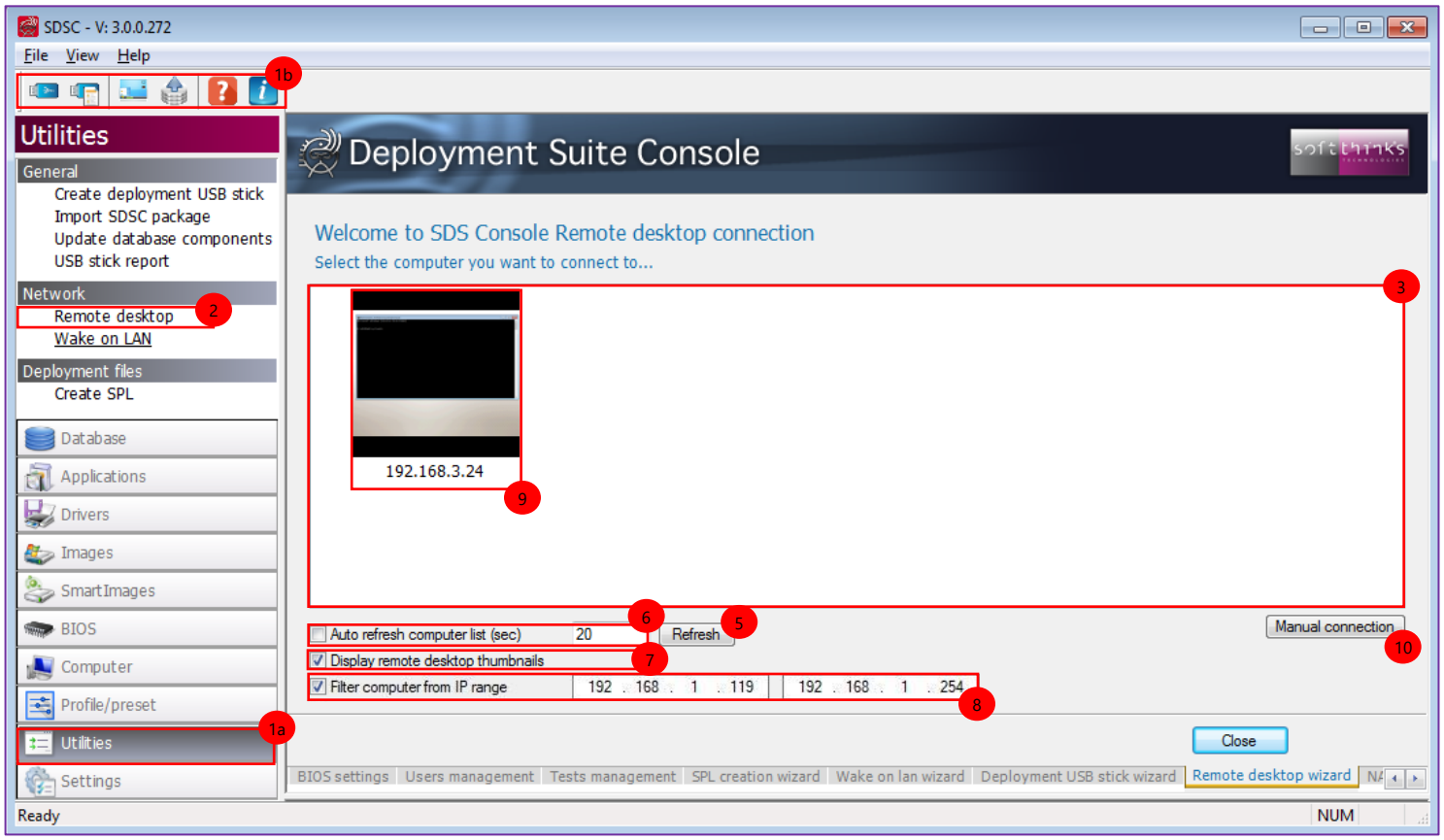
## Network

### Remote Desktop

This utility gives you the ability to view the activity on all of the devices connected to the server and to remotely manage them.

1. Click on the “Utilities” tab 1a, or directly on the button located in the toolbar 1b and go to step 3
2. Click on “Remote desktop” 2
3. You will see all the PCs connected to the server in real time 3




**Hint:** You can refresh this view 4 on demand by clicking on the “Refresh” button 5, or automatically every x seconds 6, and choose to display or not display the thumbnails 7. You can also filter the clients to display through an IP range 8

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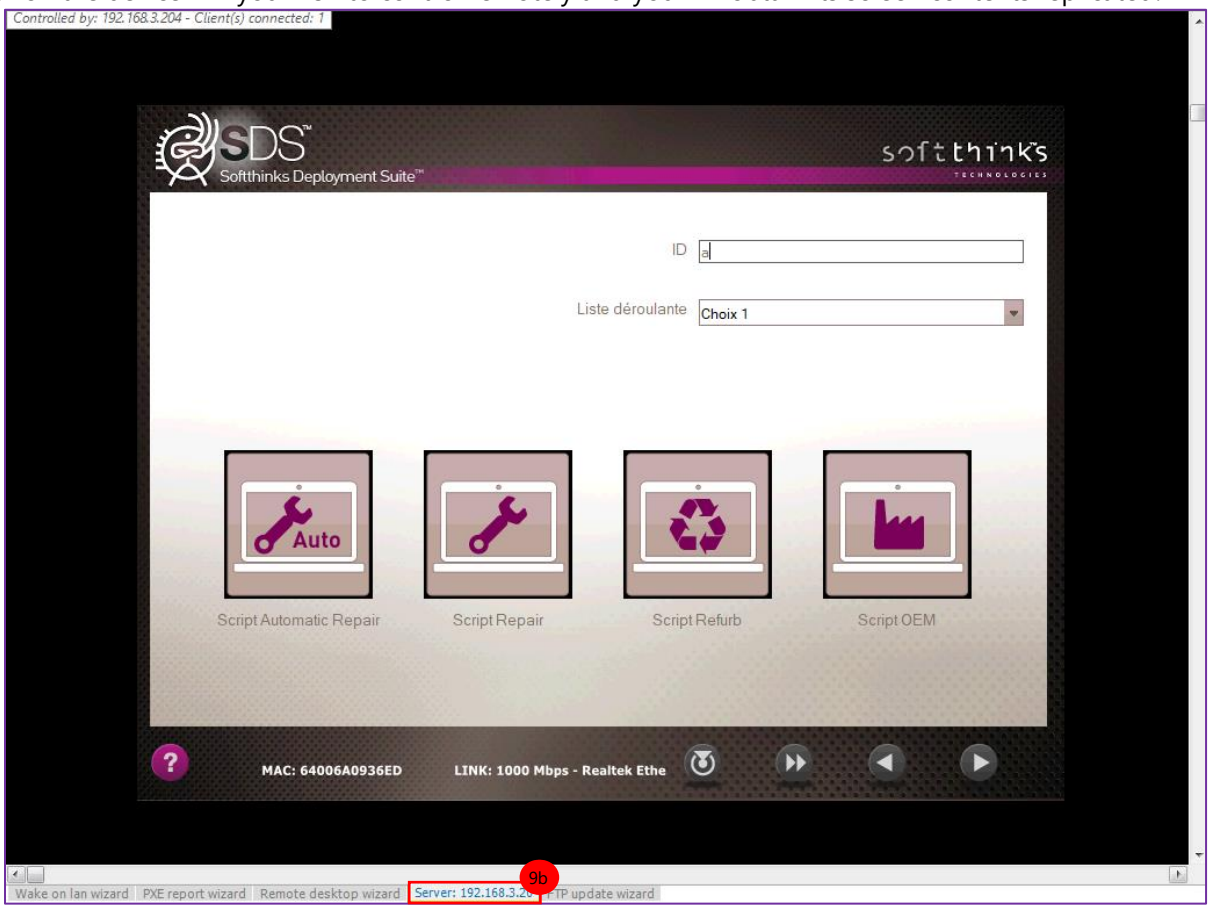
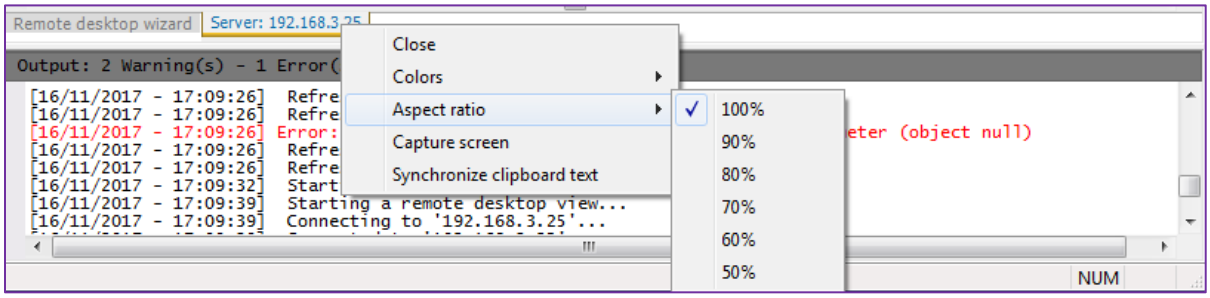
4. Click on the device 9 you wish to control remotely and you will obtain its screen contents replicated:




**Hint:** Right click on the remote display tab 9b to display a popup menu which allows you to choose a more appropriate aspect ratio, change the colors depth (16 / 256 / 64K / 16M), capture the screen and synchronize clipboard text:

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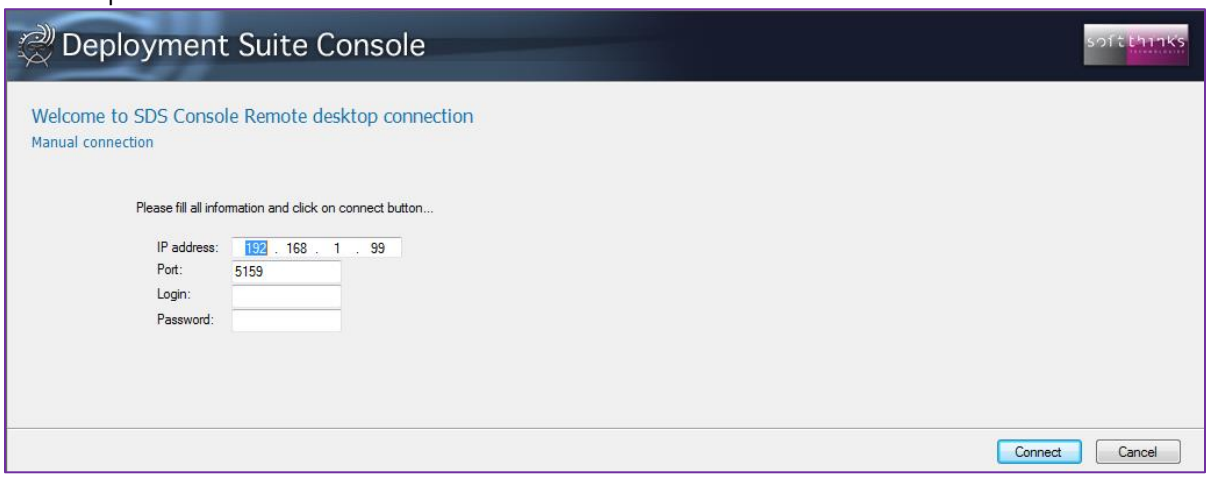
5. You can also connect to a device manually by clicking on the « Manual connection » button 11 and entering the elements required:

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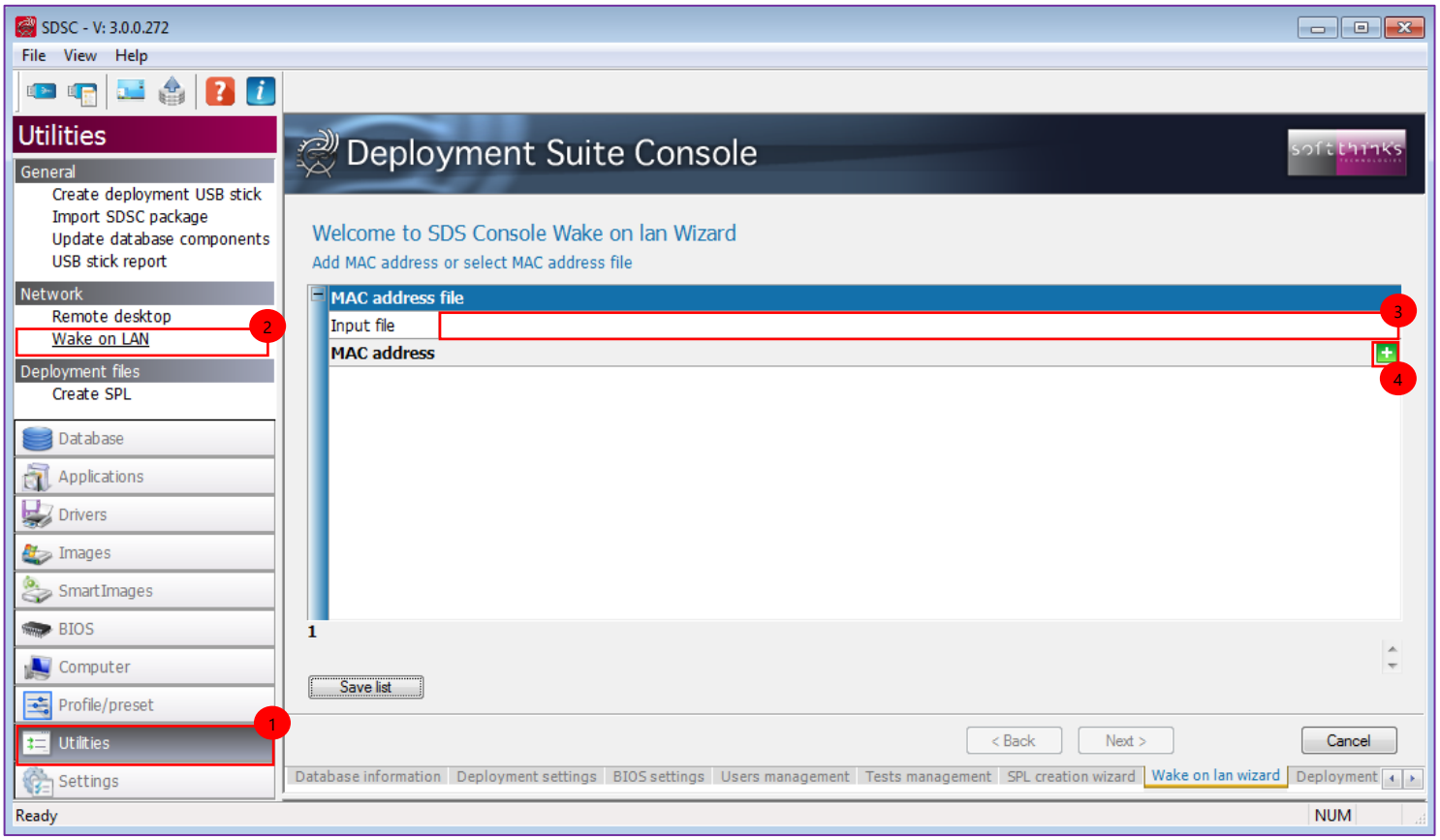
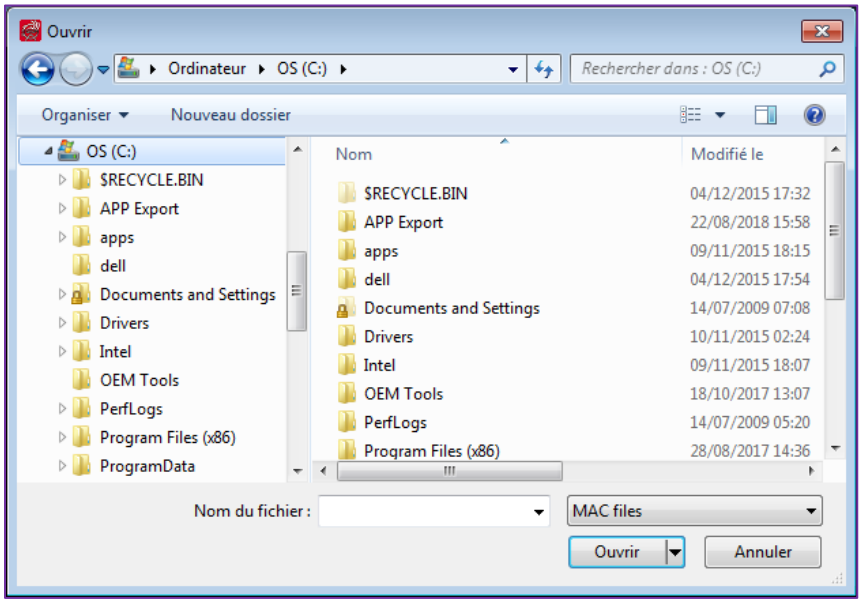
## Wake on LAN

Use this utility to manage the Wake on LAN feature for devices which support it.

1. Click on the “Utilities” tab (1)
2. Click on “Wake on LAN” (2)




3. Click on the “Input File” field (3) and browse for the file containing the MAC addresses to add:

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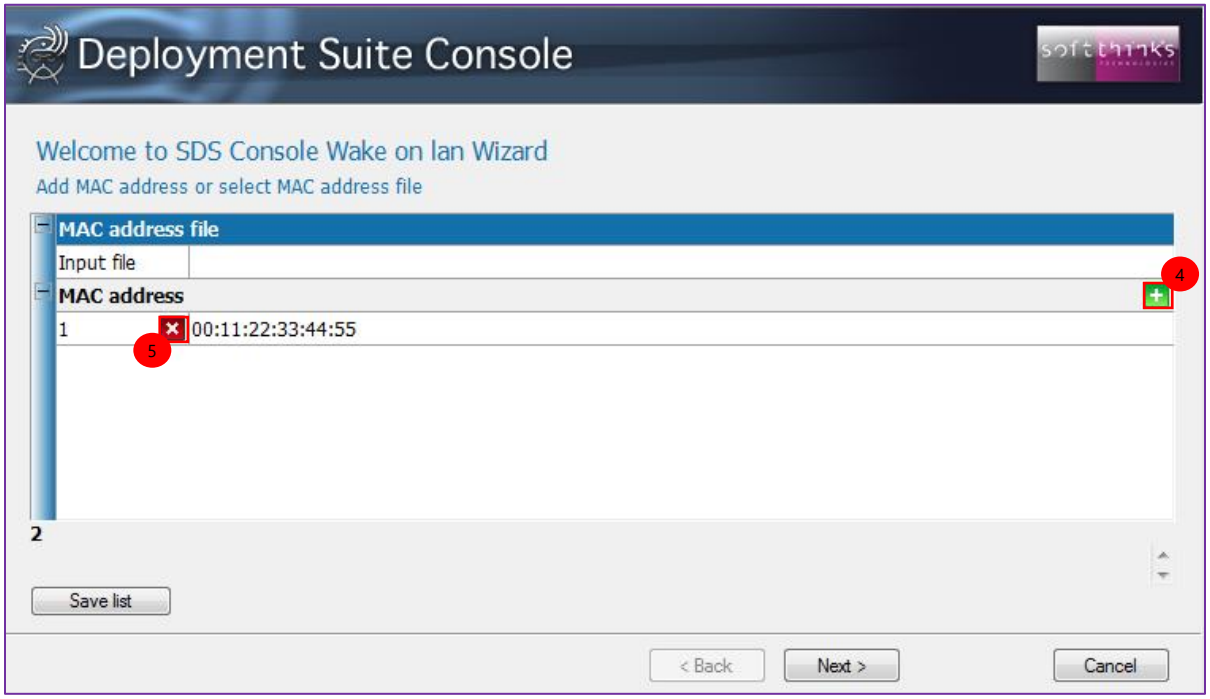
4. Or you can add manually a MAC address by clicking on the button 4:




5. To delete a MAC address, **c**lick on the button 5 in front of the MAC address you wish to delete.

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## Deployment Files

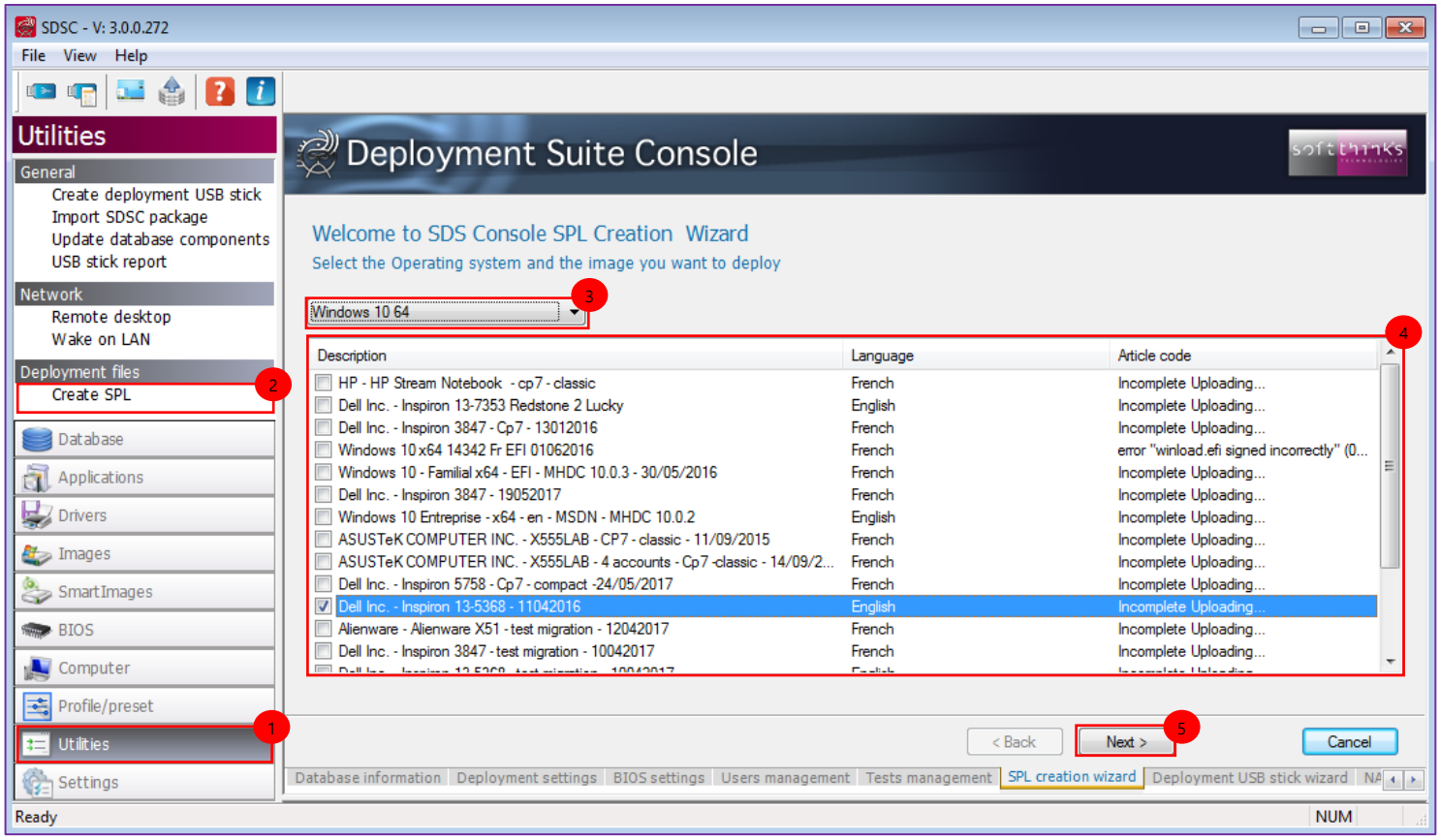
### Create SPL

**Note:** SPLs are not commonly used any longer. They have been replaced with the ADF, Profile, and Preset files which are easily created directly from the source computers.

This utility generates SPL files containing information about what to automatically deploy to a specific model of computer. The SPL files are used for the automatic deployment of:

- Partition scheme,
- Tools used for enabling/disabling SDK features,
- Operating System,
- Smart Image,
- Applications,
- Drivers,
- Bundles,
- Security patches and updates,
- Tests to be run.

1. Click on the "Utilities" tab 1
2. Click on "Create SPL" 2
3. Select the Operating System 3
4. Select the image you want to deploy in the list 4 (filtered by the OS you selected)
5. Click on the "Next >" button 5

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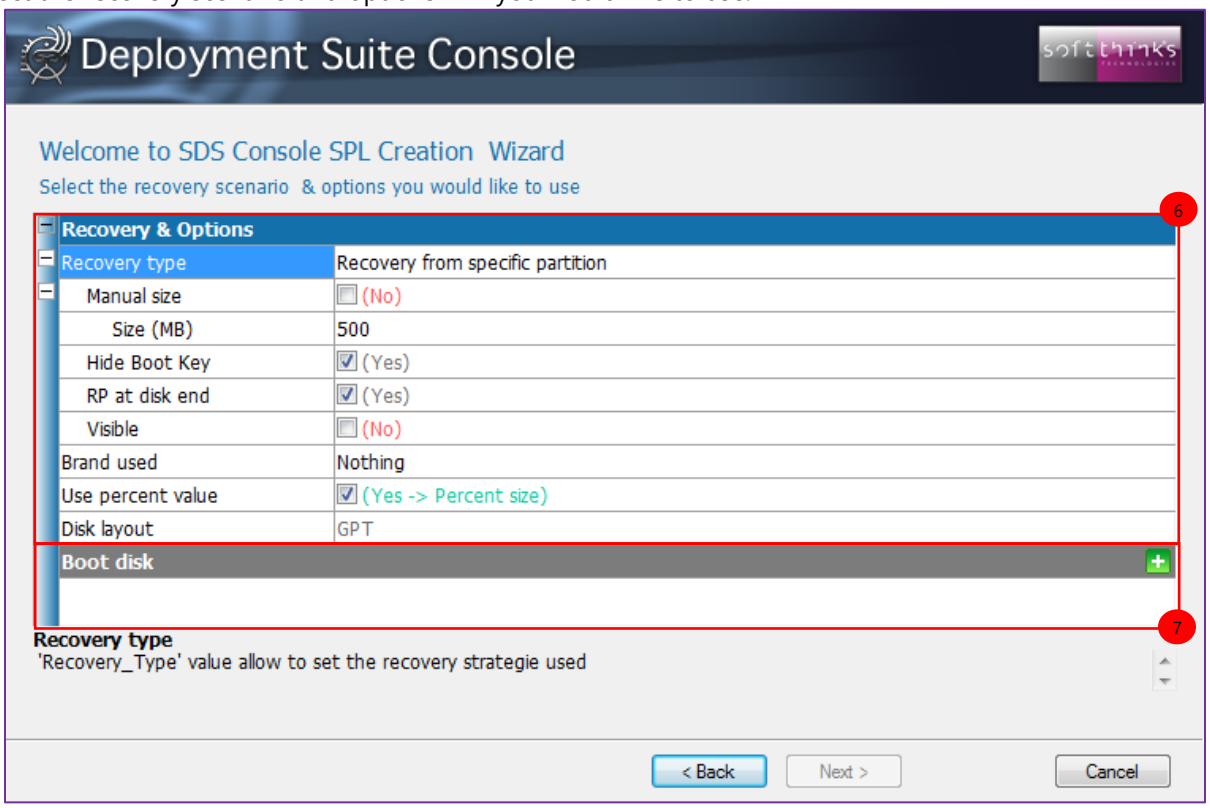
6. Select the recovery scenario and options 6 you would like to use:




- **Recovery type:** Recovery scenario
  - « No recovery »
  - « Recovery from specific location »
  - « Recovery from user partition »
  - « No Recovery solution, use only original image disk typology »

  If you choose the « Recovery from specific location » scenario you will have to set the parameters relevant to the Recovery Partition (RP):
    - **Manual Size:** « Yes » to force the size of the Recovery Partition to the « **Size (MB)** » value (else the size is dynamically estimated)
    - **Hide Boot Key:** « Yes » to hide the message about the RP boot key
    - **RP at disk end:** « Yes » to create the RP at the end of the disk
    - **Visible:** « Yes » to make the RP visible
- **Brand used:** Customizes the interface of the restore solution for a brand (logo…). Default « nothing » in the absence of specific customization.
- **Use percent value :** « Yes » to set the relative size (%) / « No » for absolute size (not relevant for the « No Recovery solution, use only original image disk typology » scenario)
- **Disk Layout:** Layout (MBR/GTP) of the disk. Depends on the image selected and cannot be modified.

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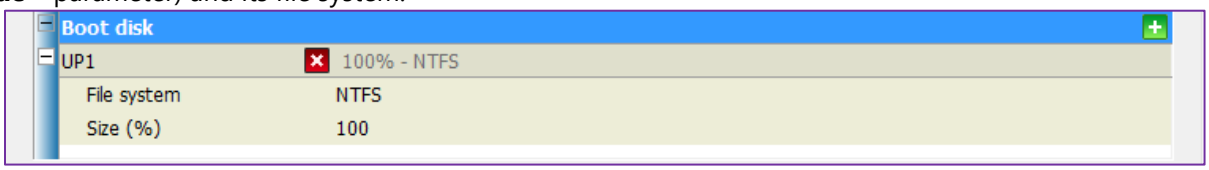
7. You can specify the partitions to create on the target disk during deployment in the Boot disk section 7 by clicking on the + button and by settings for each partition added its size (in % or in MB depending on « **User percent value** » parameter) and its file system:




On the RIS Server, the newly created SPL file must be placed in the following location:

- X:\SPL***S**XXXXXXXXX.SPL

**Note:** This transfer to the server can be an automated process. The transfer MUST be completed prior to deploying (PXE booting on the RIS server) the image to the PC.

After the SPL has been placed in the above location on the RIS server, the selectorSRV service will translate the file and output to the following locations based on the following conditions:

- Success:
  - X:\SPL\Success\SXXXXXXXXX.SPL
  - X:\SPL\Success\SXXXXXXXXX.SDK
  - X:\Deploy\XXXXXXXXX.Selector.ini (Used for deployment)
  - X:\Deploy\XXXXXXXXX.RSSelect.ini (Used for deployment)
- Error:
  - X:\SPL\Error\S000000000.SPL

The following outlines the deployment process:

1. Create SPL file.
2. Transfer SPL file to the RIS server.
3. Start RIS deployment (PXE boot).
4. Deployment tools will read DMI field and find matching deployment .ini files.
5. Display “Software List” for download with confirmation screen.
6. Deploy software image to recovery partition (RP).
7. Disconnect from server.
8. Deploy from RP to UP.
9. Test.
10. Shutdown.

Please refer to How to edit SPL Files for more details on SPL files contents.

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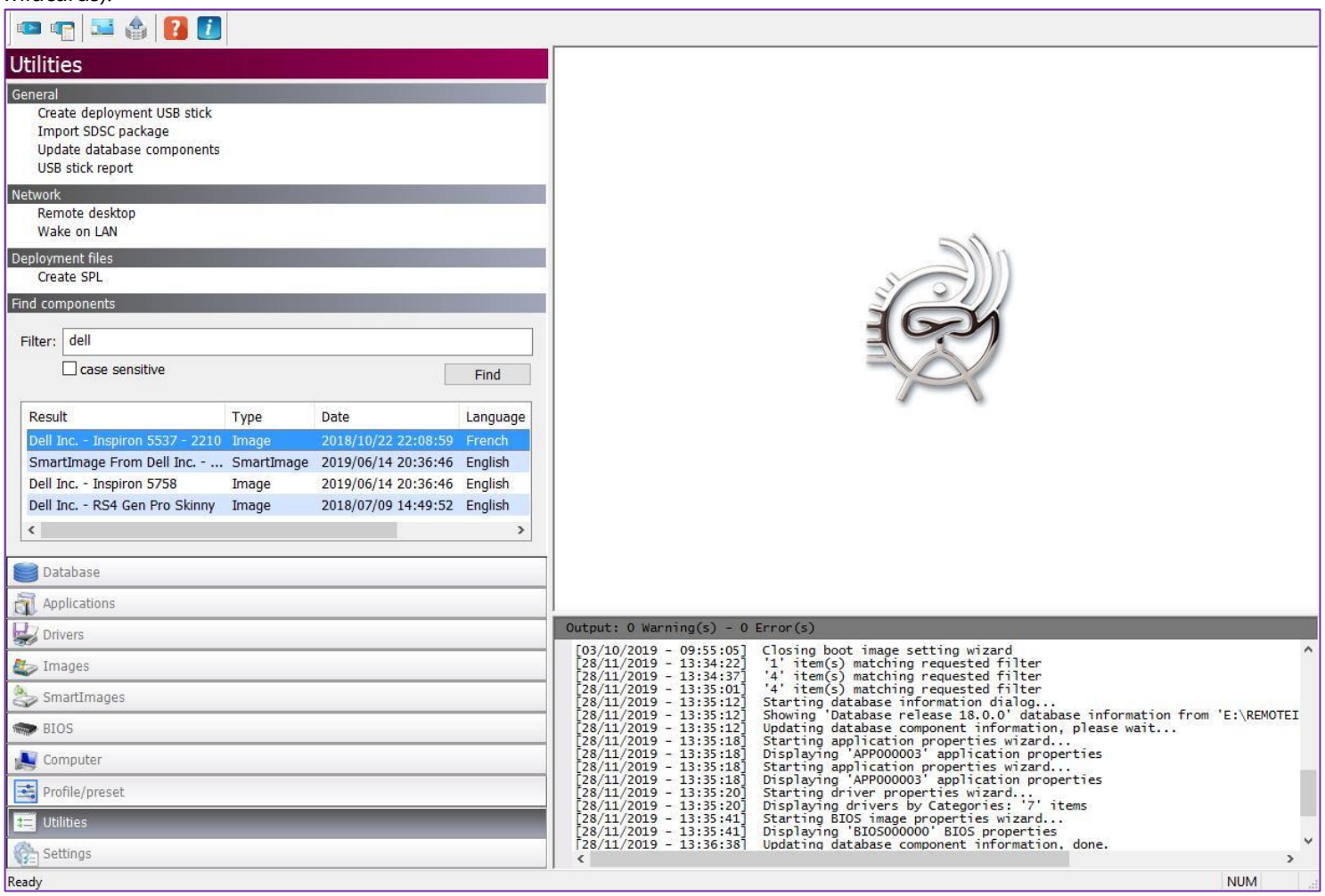
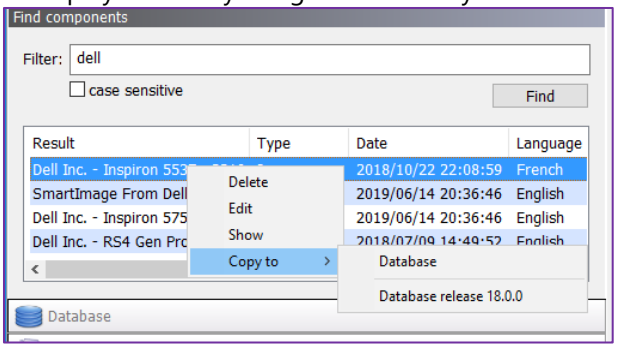
### Find components

This new feature introduced in SDS 19.0 allow you to search for components of any type through their description (with wildcards):




Once you found the component you were searching for, you can directly delete it, edit it, show it or copy it to another database through the contextual menu displayed when you right click on any item of the search results:

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# Settings

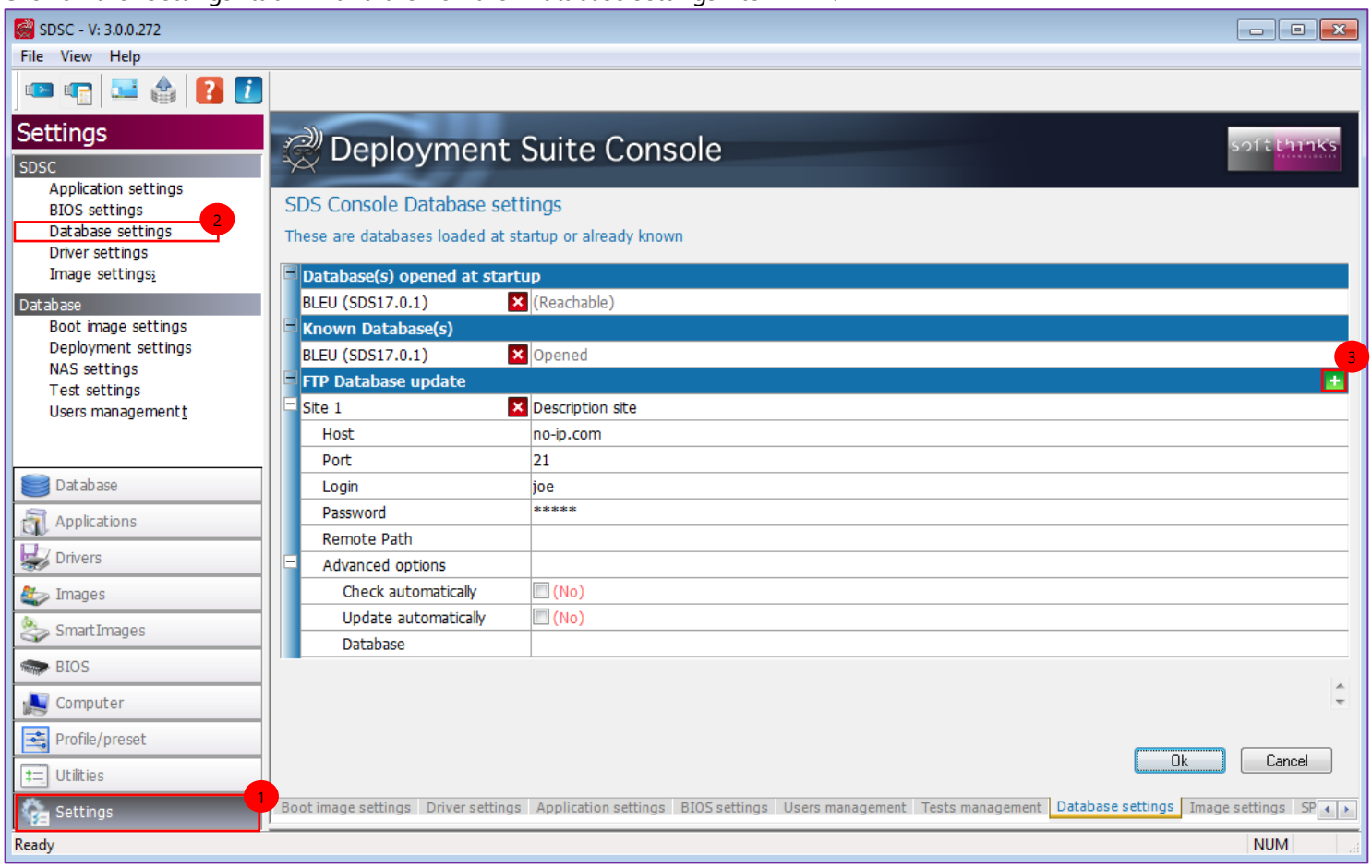
## SDSC

### Database settings

You will find the database settings below:

- Database(s) opened at startup
- Known Database(s)
- FTP Database update (See Update database components)

Click on the "Settings" tab (1) and then on the "Database settings" item (2) :




You can enter several FTP sites for the database update feature by clicking on the + button (3) and filling in those fields:

- **Site <x>:** FTP description
- **Host :** FTP address (domain name or IP)
- **Port:** FTP port (21 by default)
- **Login/Password:** FTP credentials
- **Remote path:** Remote path where is located the master database
- **Advanced options**
  - **Check automatically:** « Yes » to automatically check for a new update
  - **Update automatically:** « Yes » to apply automatically an update
  - **Database:** Database to update

To remove an FTP site, click on the ✕ button in front of it.

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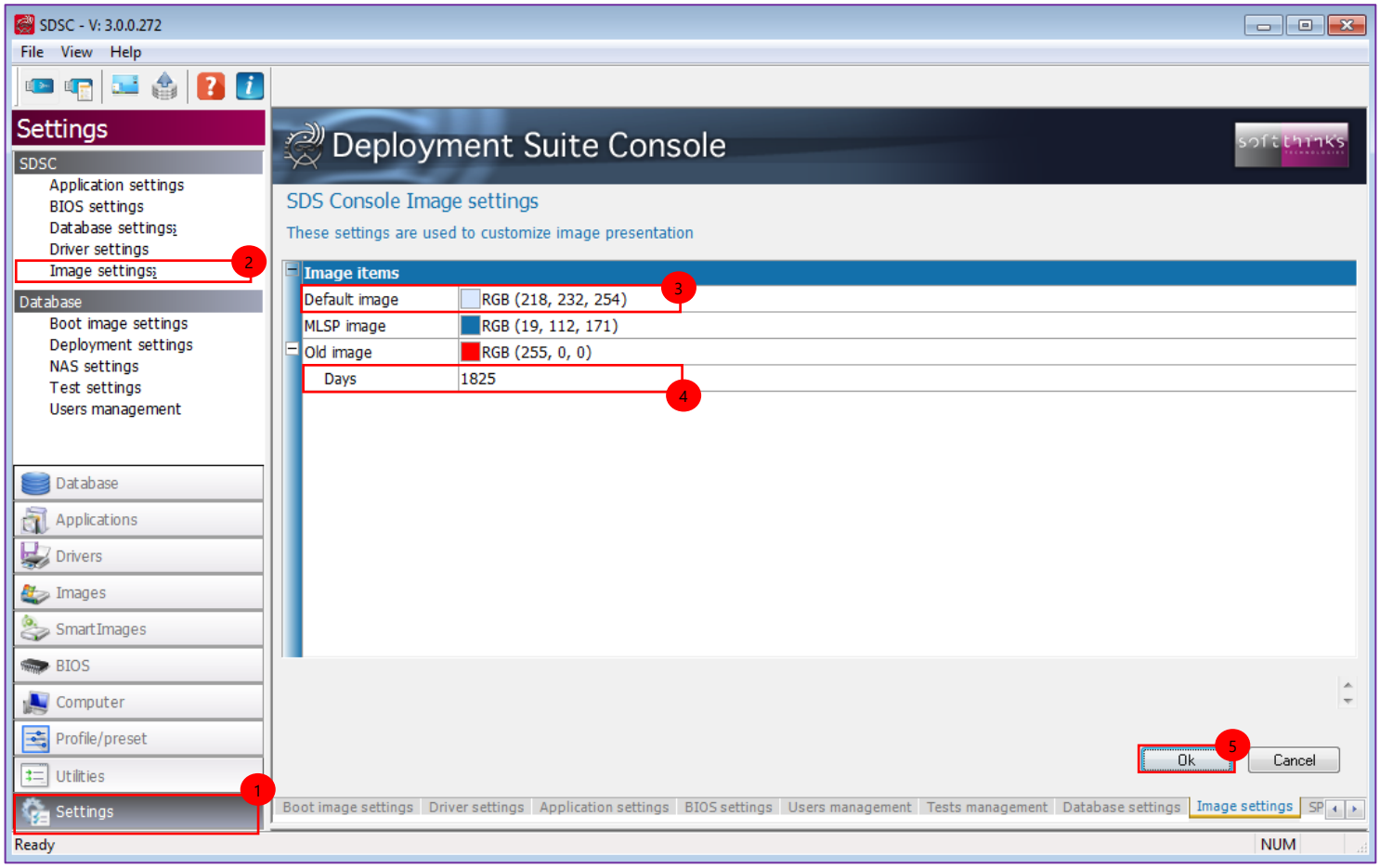
## Image settings

When you look at the images list you might notice that some of those images have a specific background color. Those different background colors allow you to quickly identify which ones are default deployment images, which ones are multilingual and which ones are old.

You can customize those colors as well as the number of days after which you consider an image as old.

1. Click on the "Settings" tab 1
2. Click on "Image settings" 2




3. Click on the image type for which you want to change the background color (Default image in our screenshot) and select the new color. 3
4. Indicate the number of days after which you consider an image as old 4
5. Click on the "OK" to apply your changes 4

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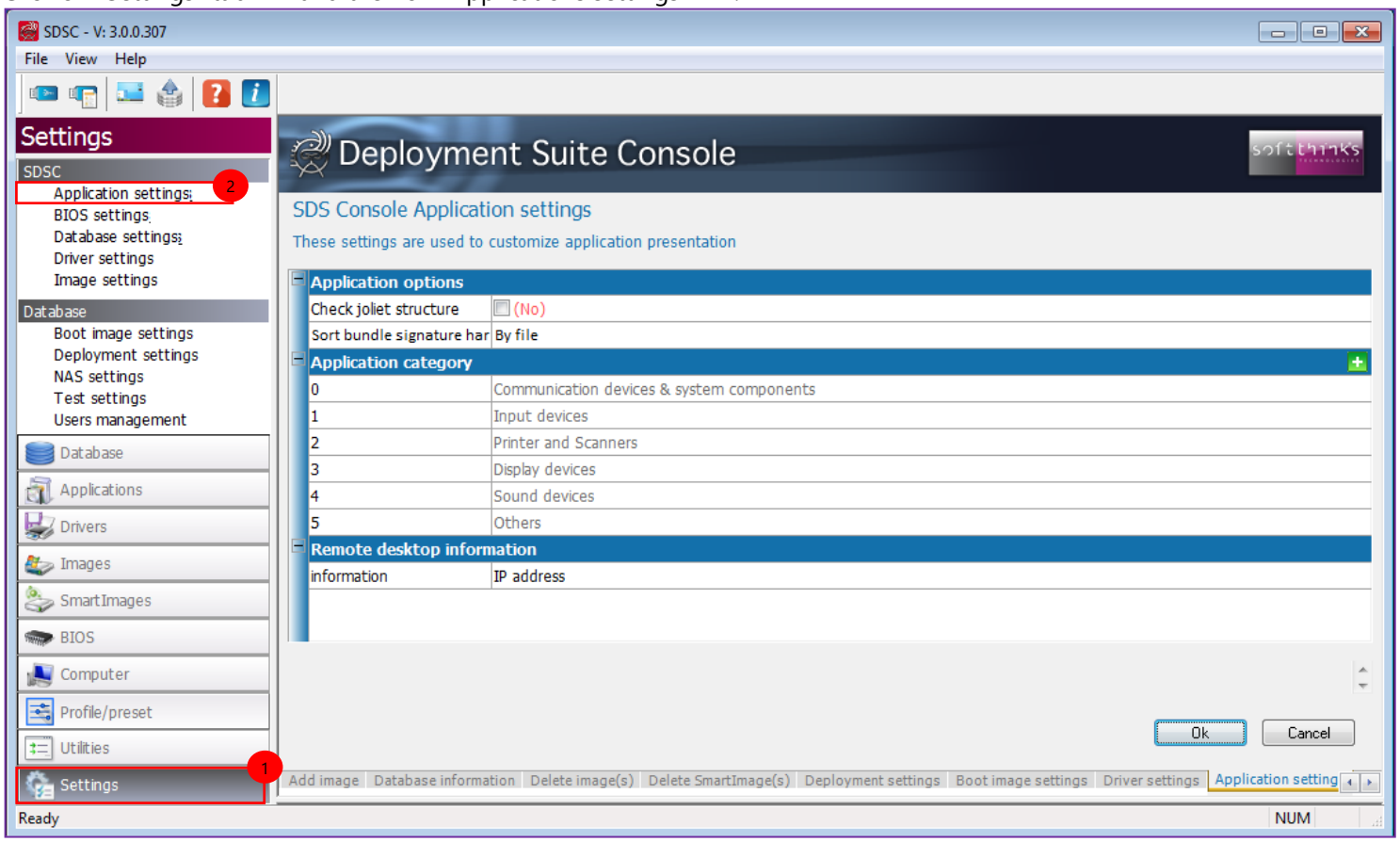
## Application settings

Click on “Settings” tab 1 and then on “Applications settings” 2:

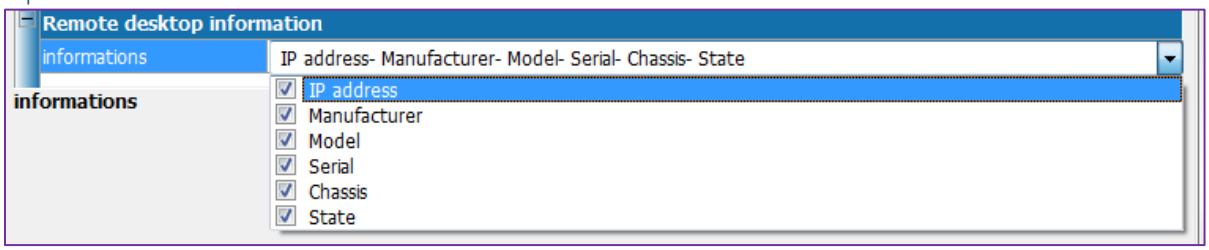



## Application options

Check the « Check Joliet structure » option to ensure that the directories containing applications are compliant to ISO9660 + Joliet. This is helpful when applications are stored on optical media.

« Sort bundle signature hardware » allows to switch between grouping PNP by signature hardware file or by device type.

## Remote desktop information

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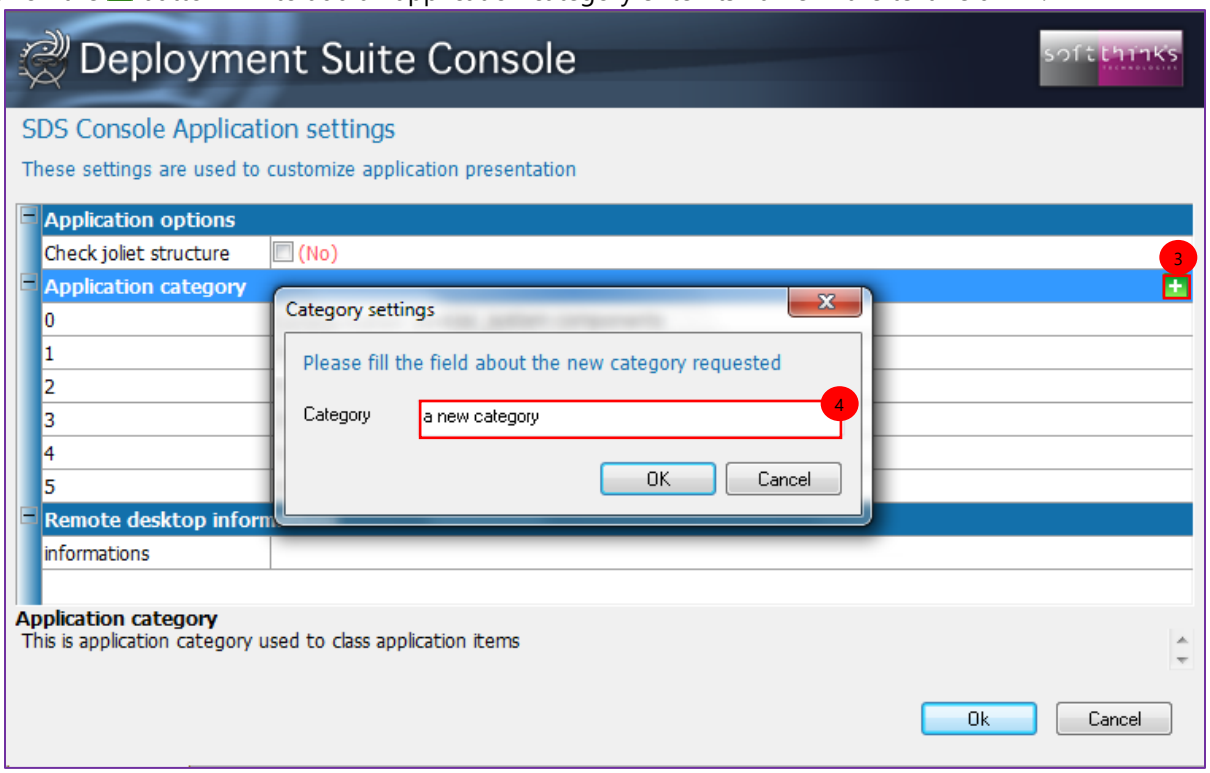
## Application categories

An application category is used to define the type of application in the database. This is useful for organizing the database and makes sorting and searching by category easier. You may add new categories to the Application type and these will be available when creating or editing an application in the database.

1. Click on the + button (3) to add an application category enter its name in the text field (4):

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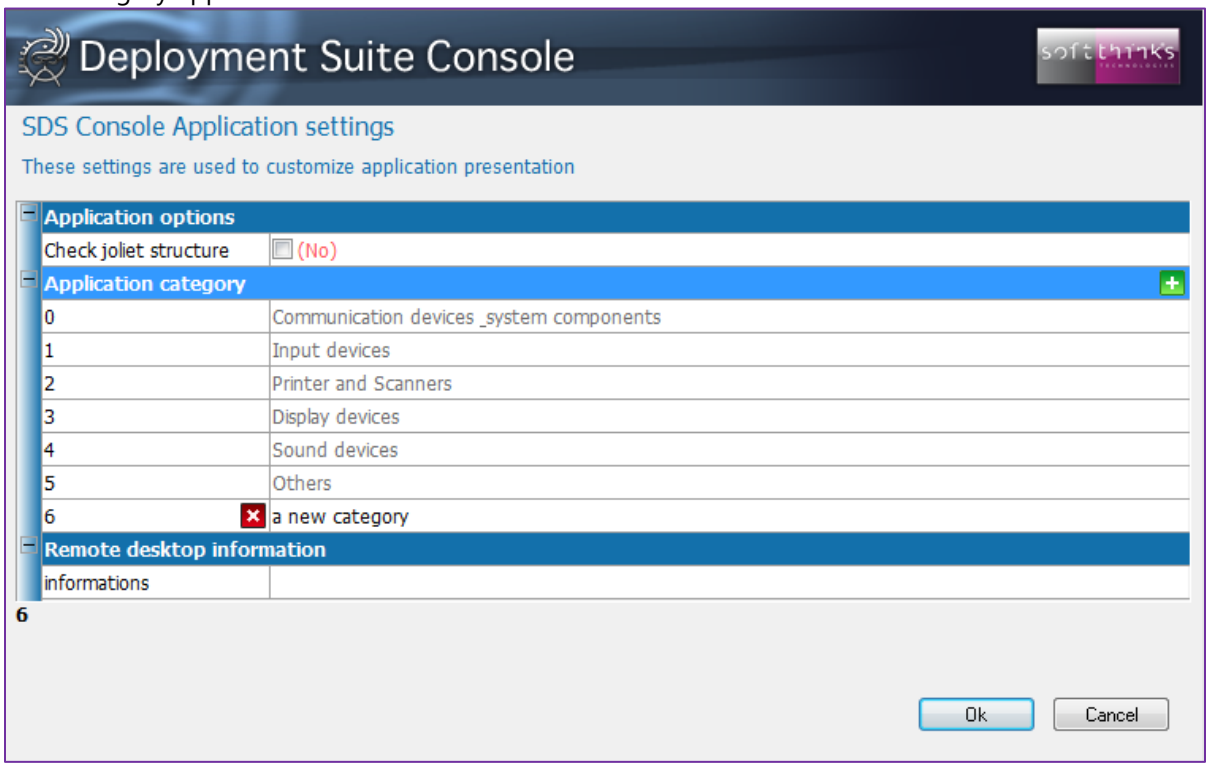
2. The new category appears at the end of the list:




**Hint:** Click on the button in front of a category you added to delete it (you cannot remove predefined application categories).

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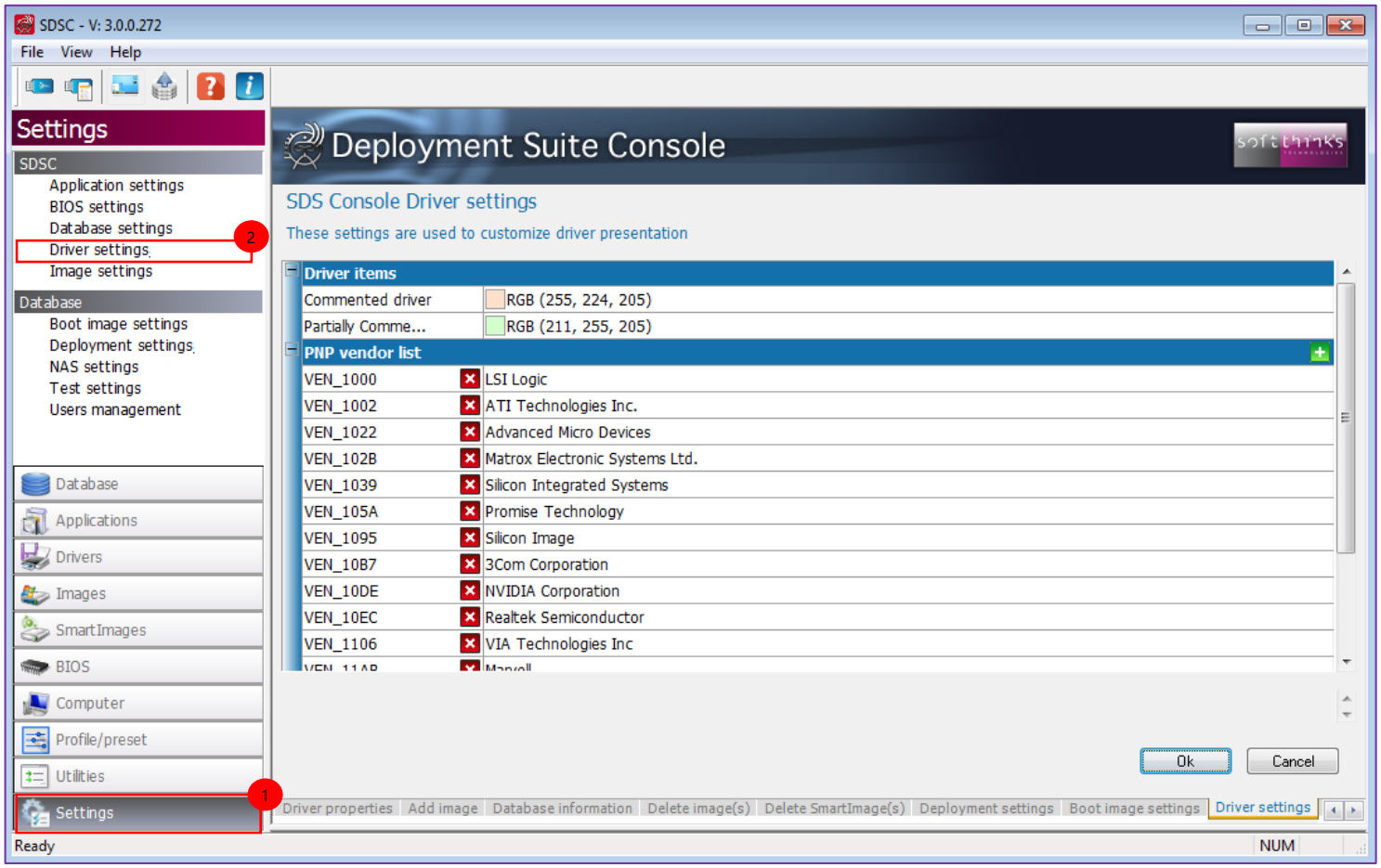
### Driver settings

The driver settings are used to customize driver presentation.

1. Click on the “Settings” tab 1
2. Click on the “Driver settings” operation 2




#### Driver items

You can customize the background color of the drivers depending if they are commented or partially commented.

#### PNP vendor list

A vendor category is used to define the type of drivers in the database. This is useful for organizing the database and makes sorting and searching by category easier. You may modify, add and remove categories and these will be available when creating or editing a driver in the database.

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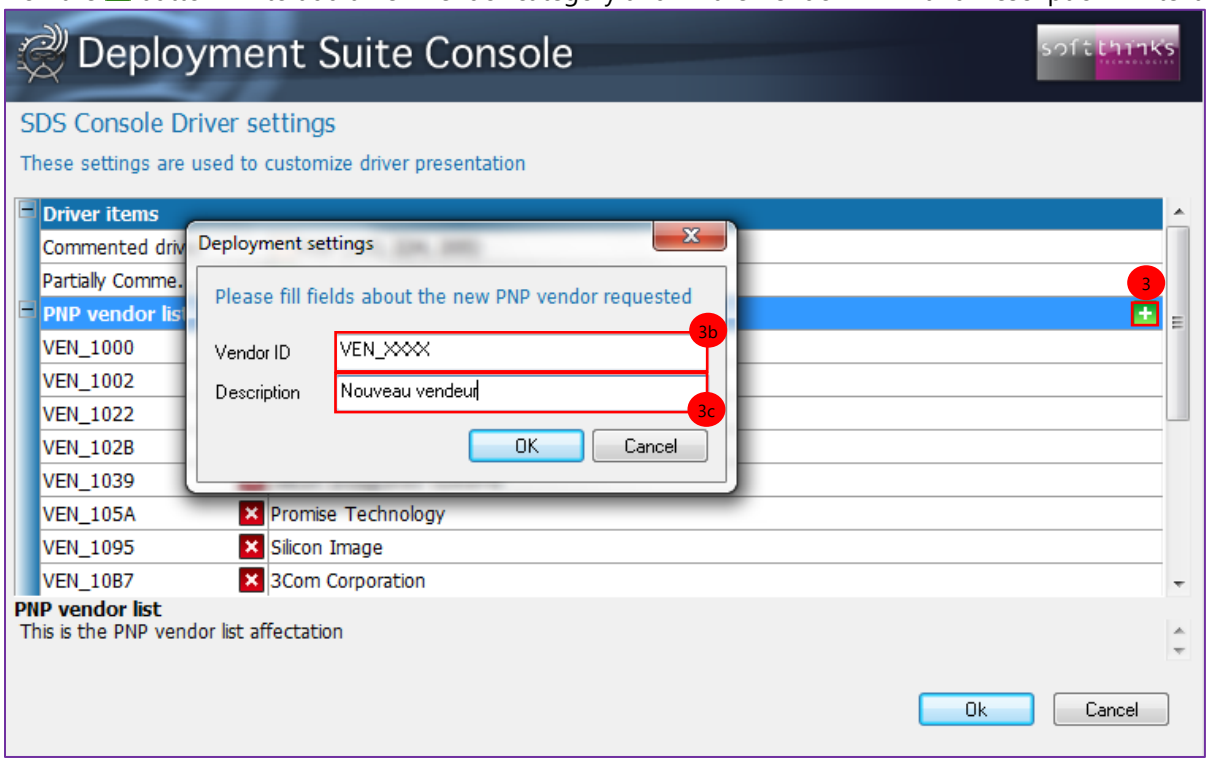
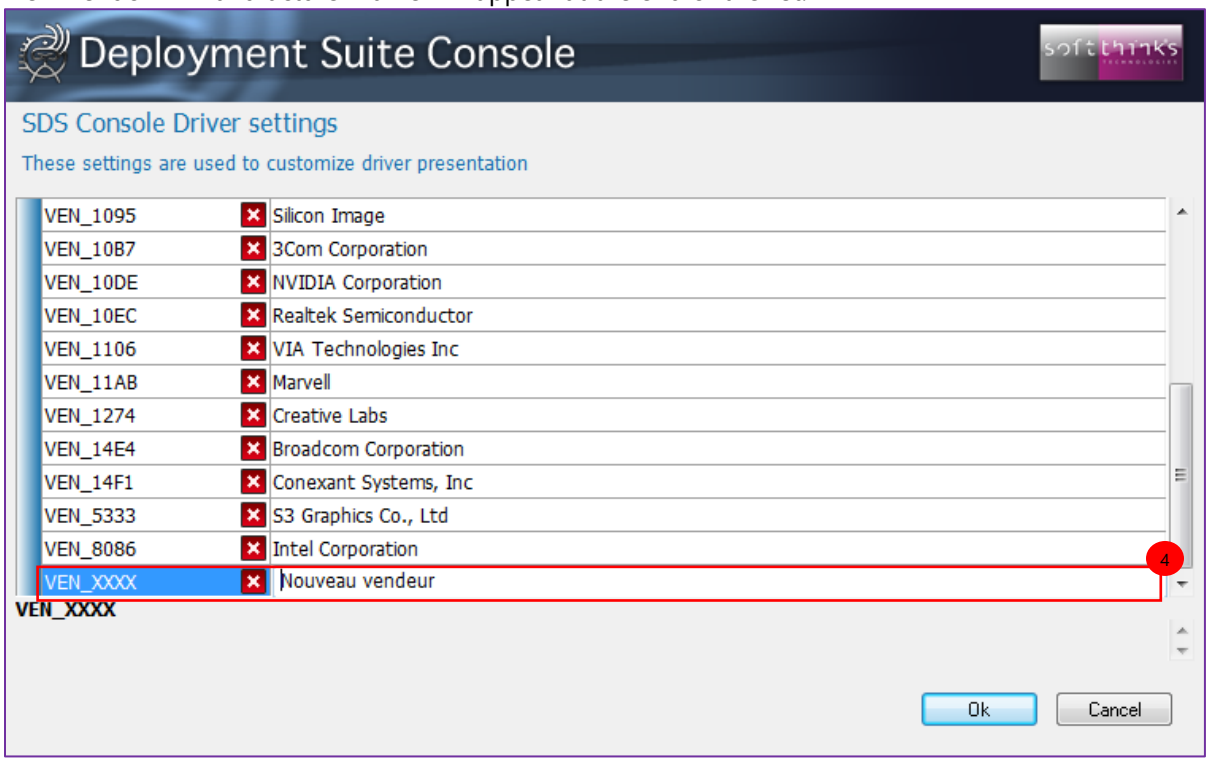
3. Click on the button (3) to add a new vendor category and fill the Vendor ID (3b) and Description (3c) text fields:




4. The new Vendor ID manufacturer name will appear at the end of the list:




**Hint:** Double-click on an item to edit it and click on the button in front of a category to delete it.

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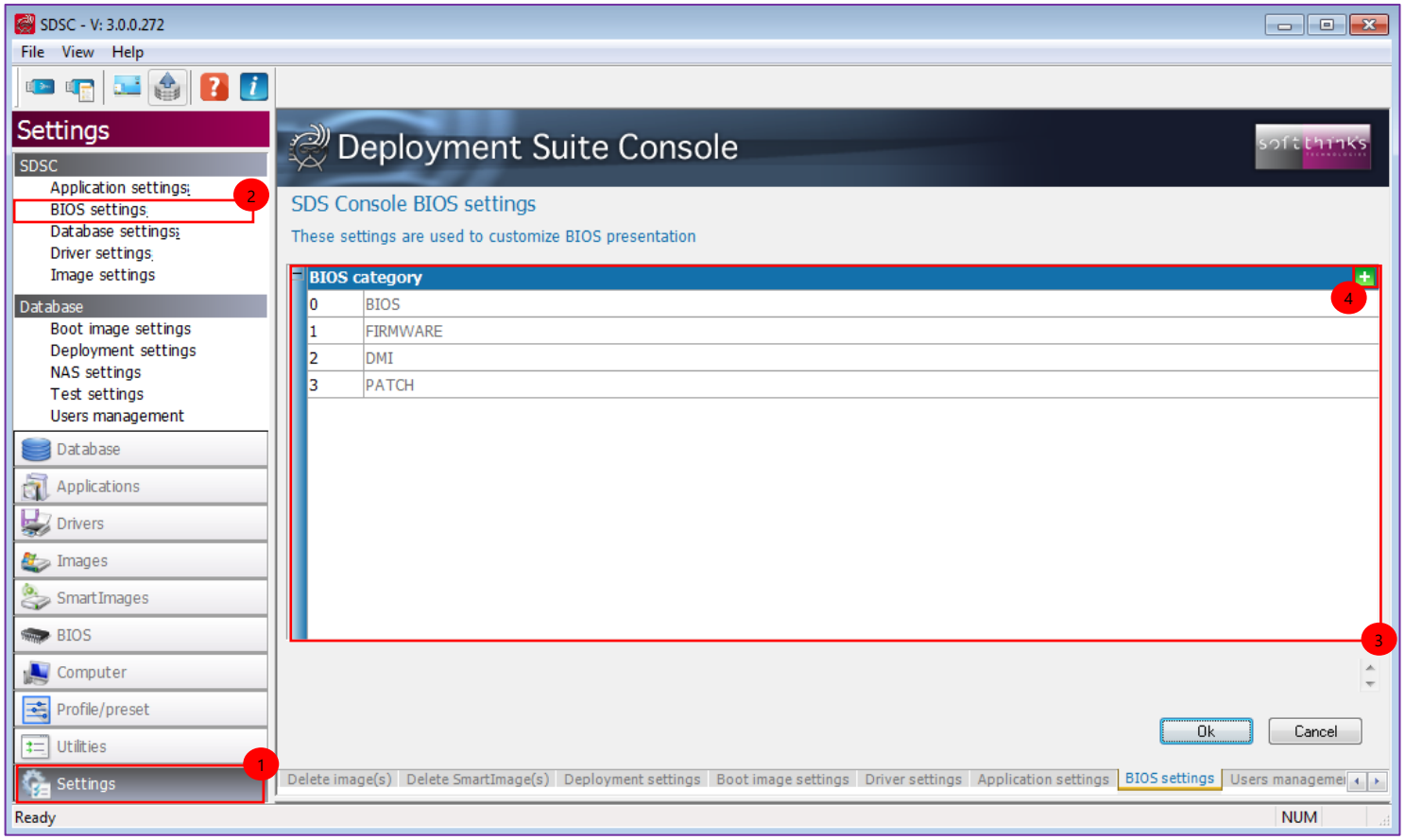
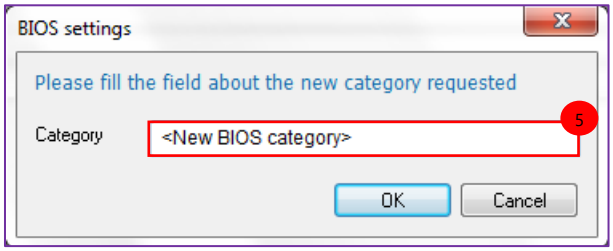
## BIOS settings

A BIOS category is used to define the type of BIOS component in the database. This is useful for organizing the database and makes sorting and searching by category easier. You may add new categories to the BIOS component type and these will be available when creating or editing BIOS components in the database.

1. Click on the "Settings" tab 1
2. Click on "BIOS settings" 2
3. You will see the current BIOS categories on the right 3. Here you have the predefined categories which cannot be modified or deleted.




4. If you want to add your own category, click on the + button 4 to add a new BIOS component category
5. Enter its name 5 in the pop-op dialog box which appears:

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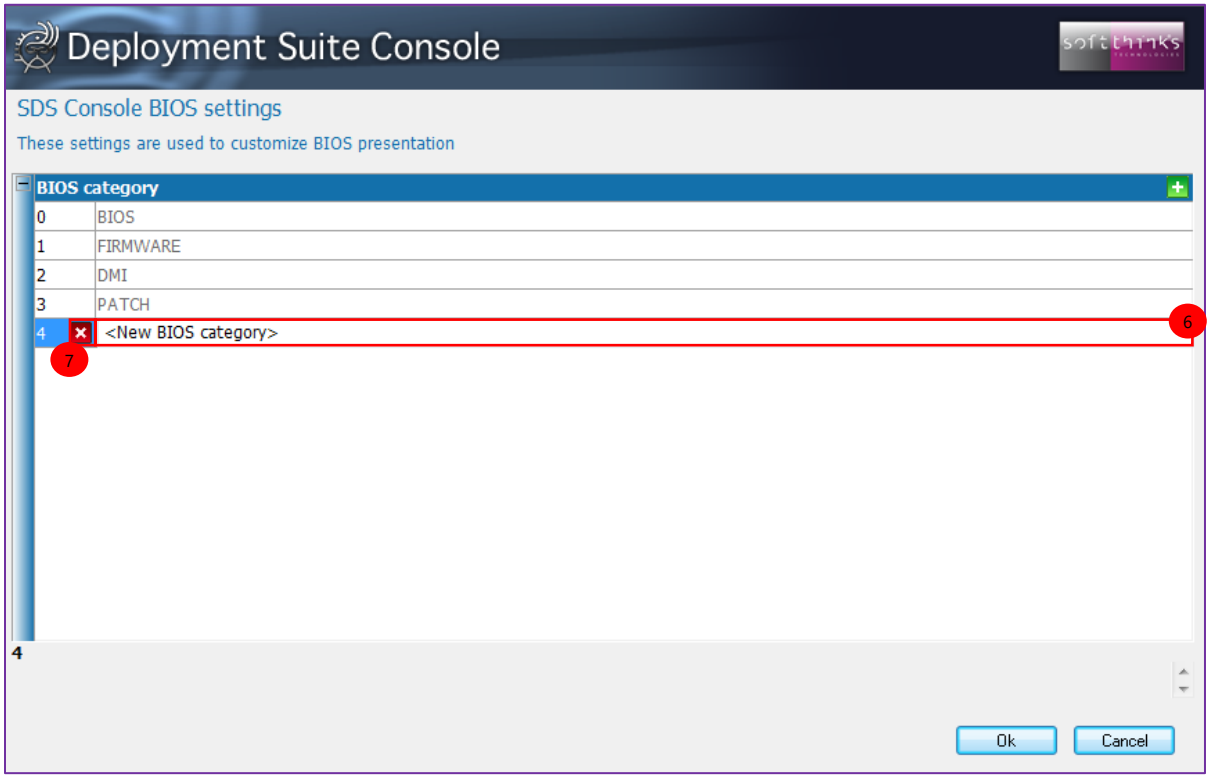
6. The new category is added to the list (6) and you can directly rename it by double-clicking on it




7. To delete a non-predefined category, click on the button in front of it (7).

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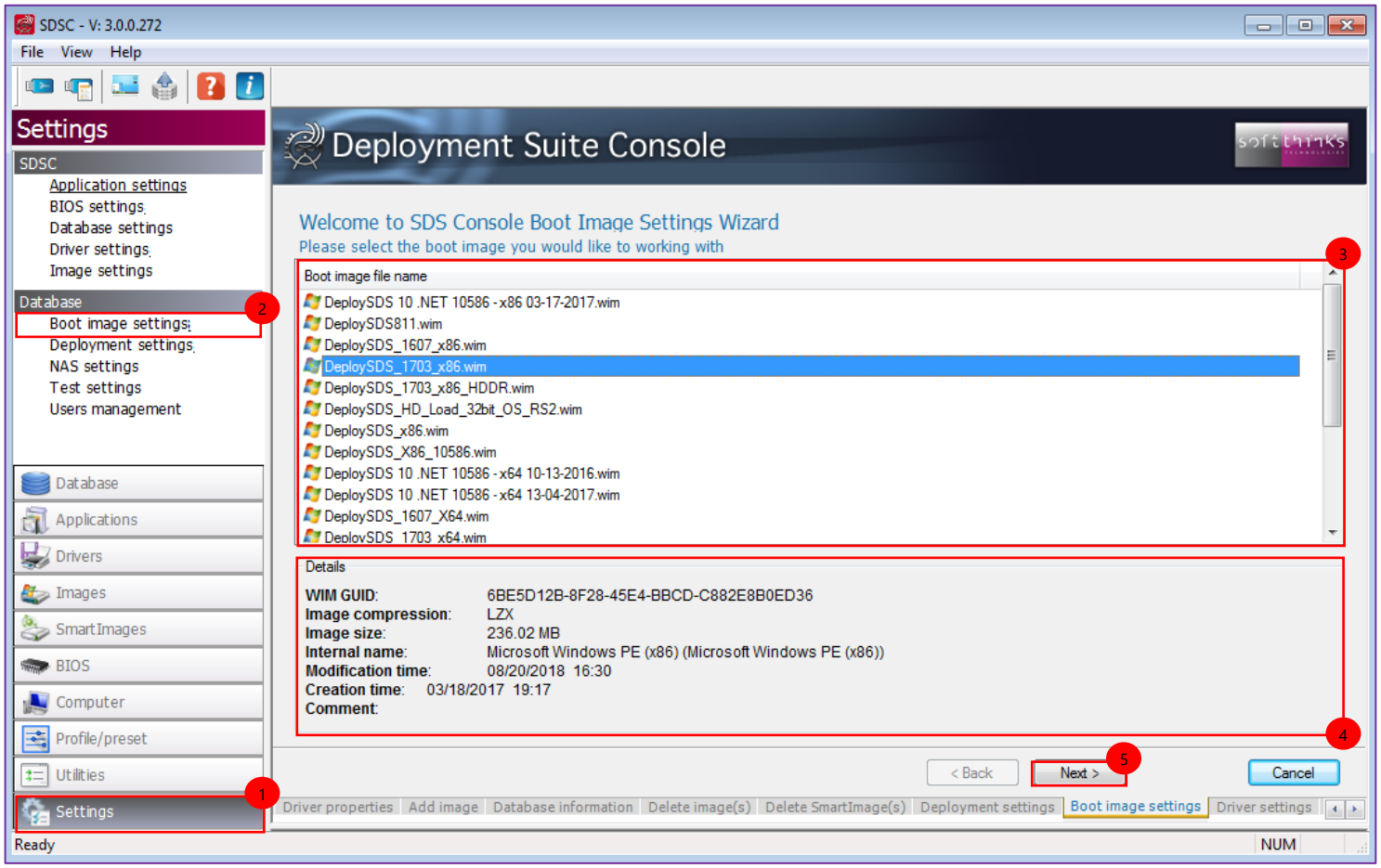
## Database

### Boot Image settings

The SDS Console Boot Image Settings Wizard allows you to perform several operations on boot images:

- Modifying some internal attributes
- Injecting driver(s) to a boot image
- Configuring the deployment launcher: domain, username, password…
- Cleaning up WDS Boot Image (image size will be reduced)

1. Click on the "Settings" tab 1
2. Click on "Boot image settings" 2




3. Select the boot image you would like to work with 3
4. You can review the selected image properties in the Details section at the bottom 4 to confirm your choice
5. Click on the "Next >" button 5

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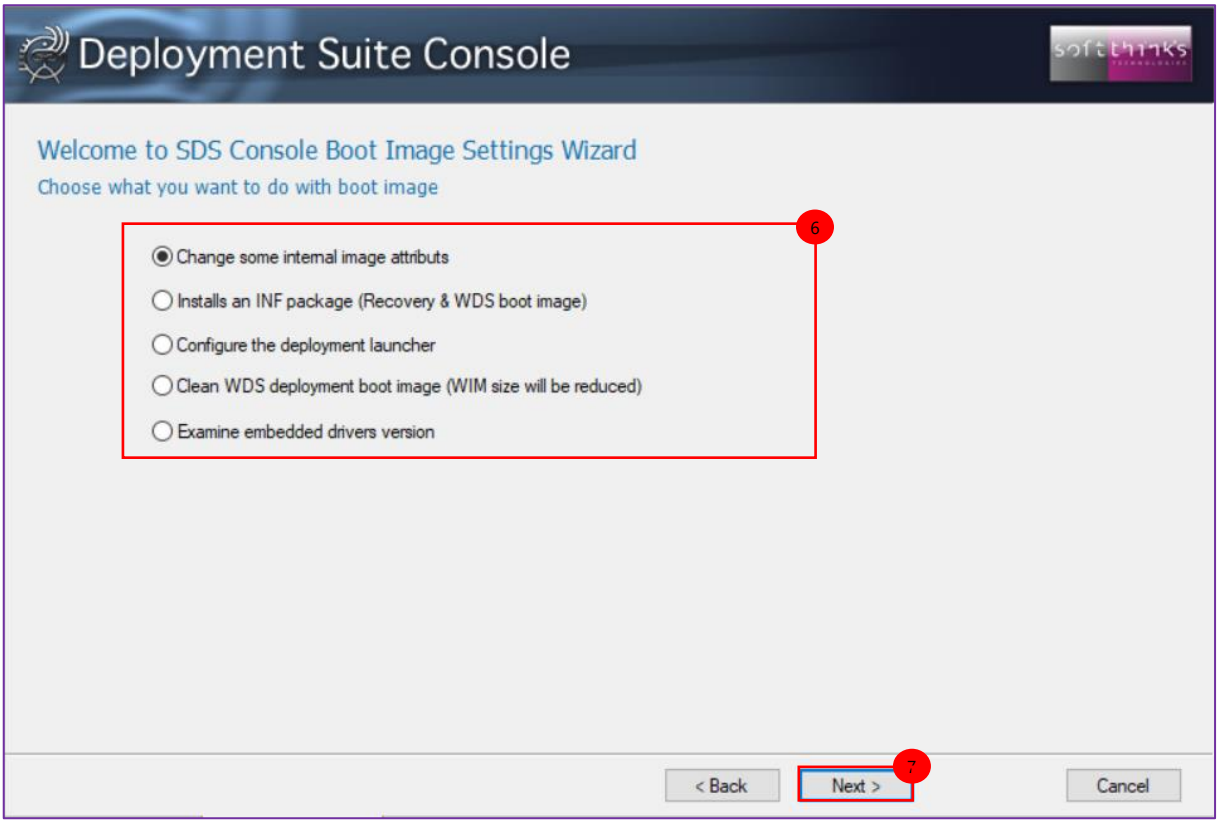
6. Choose the action you want perform on the selected boot image (6) :




- **Change some internal image attributes:** View and edit the boot image activities and properties
- **Installs an INF package (Recovery & WDS boot image):** Inject a driver in the boot image
- **Configure the Deployment launcher:** View and edit the properties of the deployment launch process
- **Clean WDS deployment boot image:** Clean up the boot image from older copies of files modified
- **Examine embedded drivers version:** View and manage the drivers included in the boot image

7. And click on the “Next >” button

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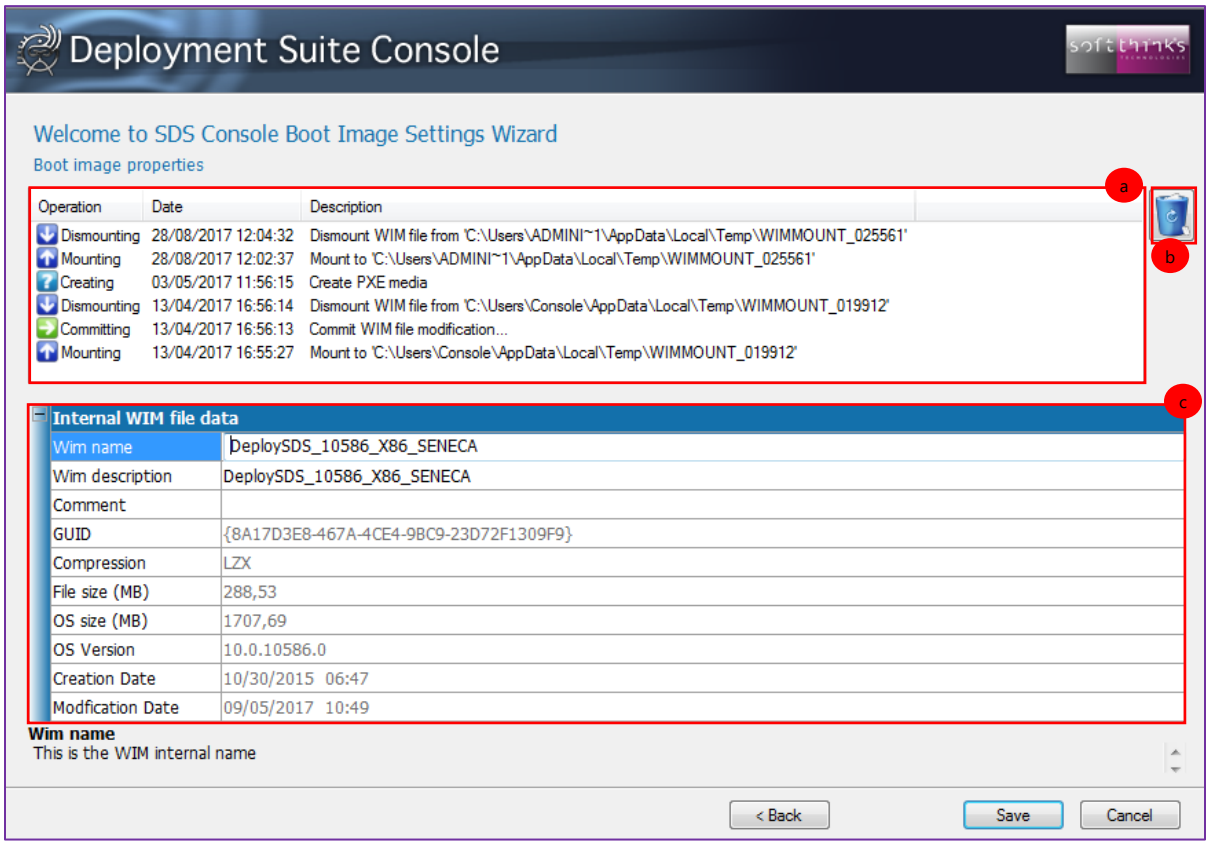
- Change some internal image attributes

  If you selected the "Change some internal image attributes" option in step 6, you can view the last activities made on the selected boot image (a) and purge this history by clicking on the button (b) :




  You can also view the boot image properties (c) and modify some of them (the first three):

  - **Wim name:** Boot image name
  - **Wim description:** Boot image description
  - **Comment:** Optional comment
  - **GUID:** Boot image ID
  - **Compression:** Compression method (LZX...)
  - **File Size (MB):** Boot image size (compressed)
  - **OS Size (MB):** Boot image contents size (uncompressed)
  - **OS Version:** Version of the boot image OS
  - **Creation Date:** Boot image creation date
  - **Modification Date:** Boot image last modification date

- Installs an INF package (Recovery & WDS boot image)

  Please refer to Injecting a driver ("Inject Driver(s)" operation).

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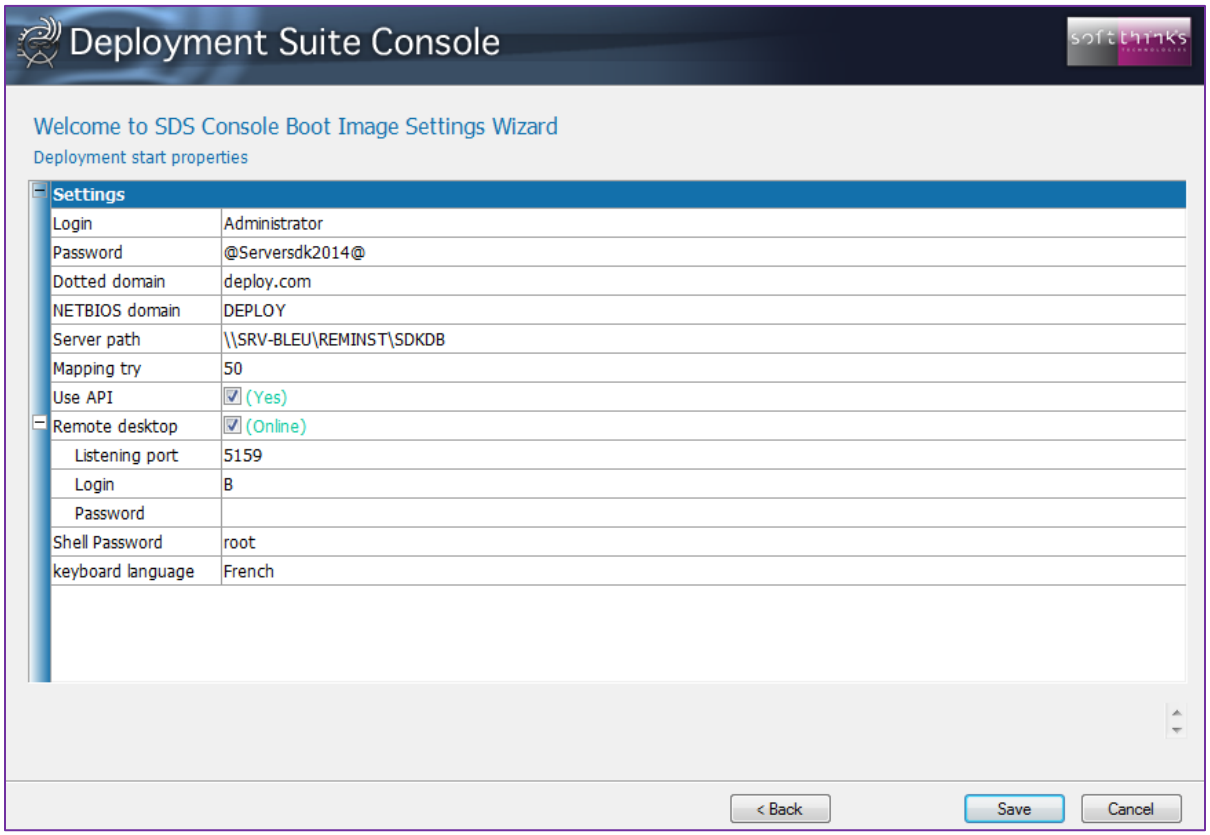
- Configure the Deployment launcher

If you selected the "Configure the Deployment launcher" option in step 6, you can change attributes related to networking so a network connection can be established during deployment to transfer data to the target system:




- **Login / Password:** Network credentials to use when mapping the "N:" drive on the deployment server
- **Dotted domain:** Fully qualified Windows Server domain name of the deployment server
- **NETBIOS domain:** Domain name of the deployment server used by systems before Windows 2000
- **Server path:** UNC path to the database on the server
- **Mapping try:** Number of times to retry if mapping fails
- **Use API:** Use the Microsoft connect API if a standard 'net use' failed to connect to server (leave it checked unless you encounter connection issues)
- **Remote desktop:** « Yes » to activate remote desktop feature
  - **Listening port:** Port used to listen for incoming connection
  - **Login / Password:** Credentials to open a remote session
- **Shell password:** Password required to launch the shell. Leave it empty unless you want to enter credentials.

  **Keyboard language:** Keyboard layout

**Note:** If you change the Administrator password on the server, don't forget to update it here or else the devices will no longer be able to connect to the server.

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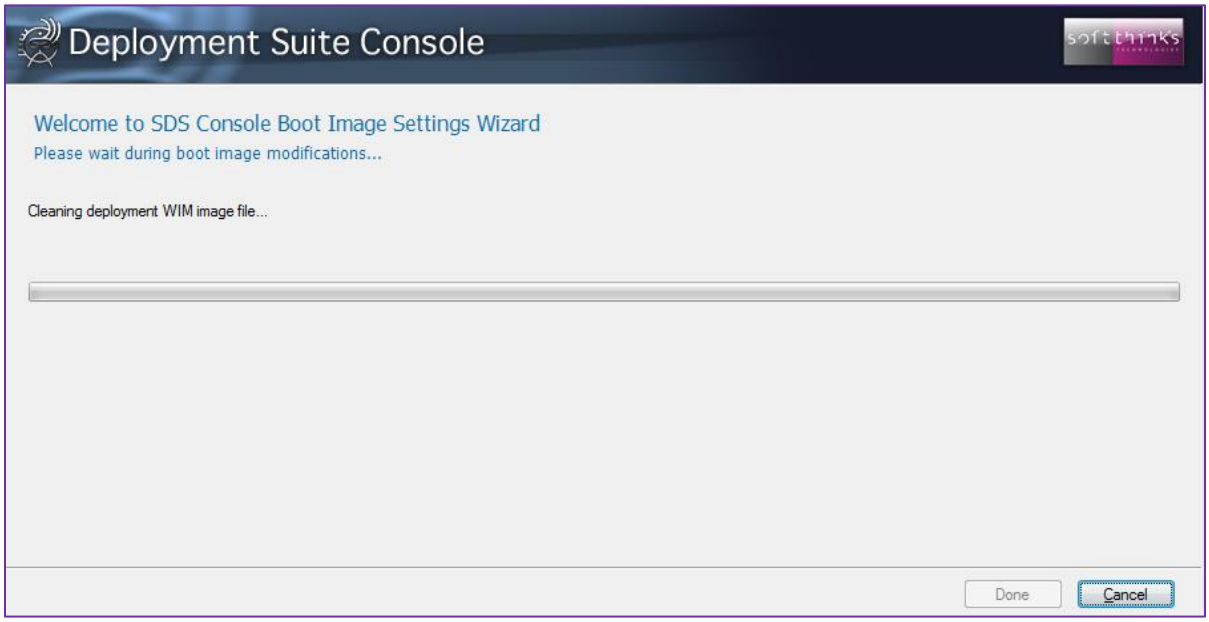
- Clean WDS deployment boot image

  If you selected the "Clean WDS deployment boot image" option in step 6, we will remove all the previous versions of the modified files and so will decrease the boot image size (each time you update the boot image its size increases, because instead of replacing the old version of a modified file, it adds the new version to the image):

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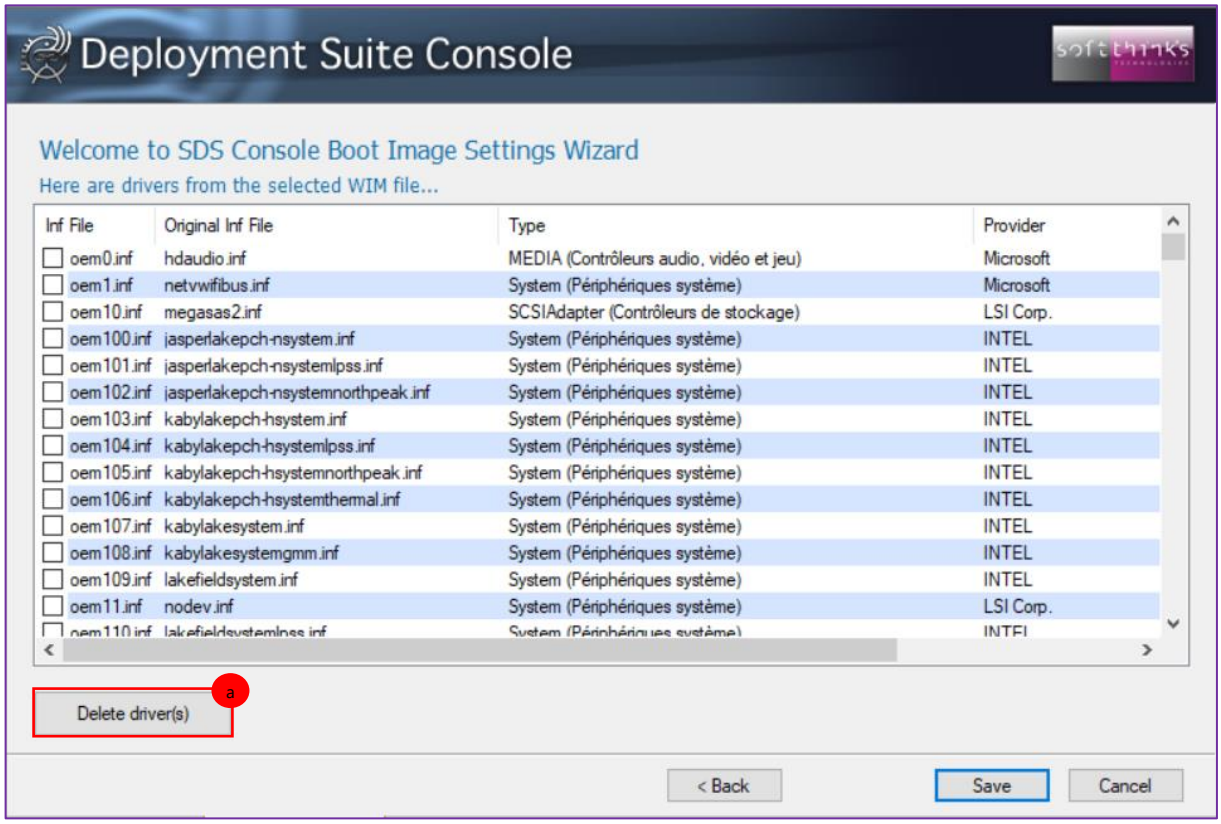
- Examine embedded drivers version

If you selected the "Examine embedded drivers version" option in step 6, we will mount the boot image previously selected (this operation can take few seconds depending on the boot image size) and display the drivers which have been added through "Installs an INF package (Recovery & WDS boot image)":




You have the ability to delete some drivers from this boot image by selecting them with the checkbox in front of those and then clicking on "Delete driver(s)" button [a].

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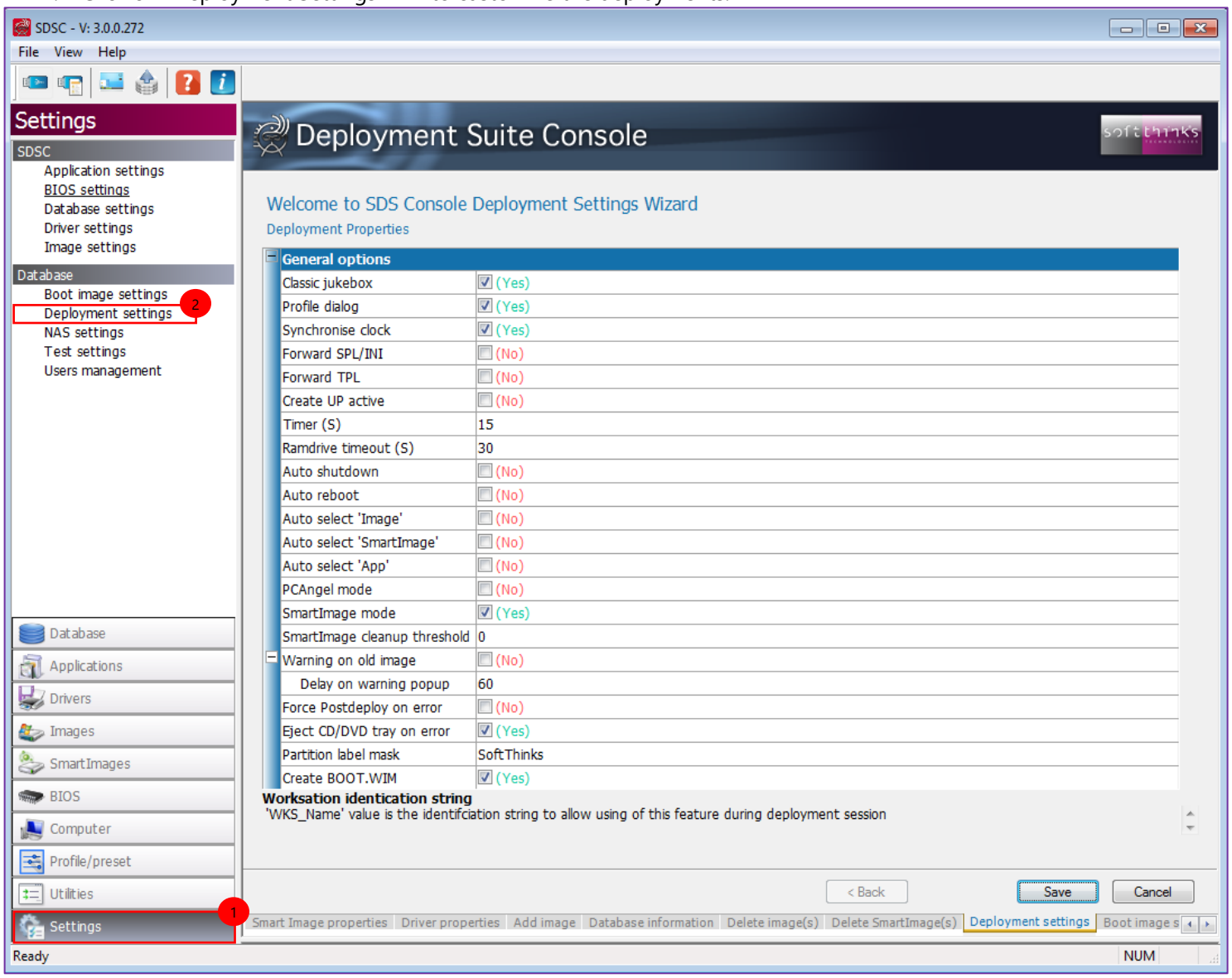
## Deployment settings

1. Click on the “Settings” tab 1
2. Click on “Deployment Settings” 2 to customize the deployments:

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General options

- **Classic Jukebox:** Present a skip button on profile dialogue box if no preset is found for the jukebox mode
- **Profile Dialog:** Show the Profile Dialog box otherwise going directly to the jukebox mode
- **Synchronize Clock:** Synchronize the target device CMOS clock with the date and time from the server
- **Forward SPL/INI:** Copy SPL and deployment INI files to <UserPartition>:\Windows\Options folder
- **Forward TPL:** Forward the TPL file to the deployment server after deployment completes
- **Create UP Active:** Ensure that the user partition is set to active
- **Timer (S):** Time before deployment begins and before a reboot occurs after deployment completion
- **Ramdrive timeout:** The time to wait to retry accessing the Ramdrive
- **Auto shutdown:** Automatically shut down the device at the end of a successful deployment
- **Auto reboot:** Automatically reboot the device at the end of a successful deployment
- **Auto select 'Image':** Automatically select the image during the deployment
- **Auto select 'SmartImage':** Automatically select the SmartImage that is compliant with the image if available
- **Auto select 'App' :** Automatically selected applications during deployment
- **PCAngel mode:** Kept for compatibility. Do not modify
- **SmartImage mode:** « Yes » to create a Smart Image based on plugged disk
- **SmartImage cleanup threshold:** Delete the earlier SmartImage when creating a new one
- **Warning on old image:** Display a message when the image selected is older than « **Delay on warning popup** » days if no SmartImage has been selected
- **Force PostDeploy on error:** Force PostDeploy on error
- **Eject CD/DVD tray on error:** Eject optical device tray on error
- **Partition label mask:** User partition label mask
- **Create BOOT.WIM:** Create the boot image for the recovery solution

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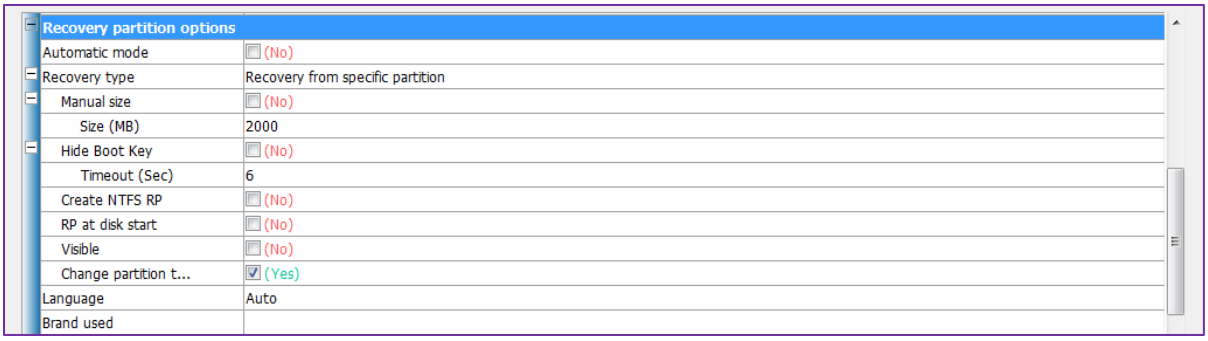
### Recovery partition options




- **Automatic mode:** Bypass recovery options at run time
- **Recovery type:** System recovery scenario:
    - "No recovery"
    - "Recovery from specific location"
    - "Recovery from user partition"
    - "No Recovery solution, use only original image disk typology"

  If you select the "Recovery from specific location" option you have to fill those settings:

  - **Manual Size:** "Yes" to force the Recovery Partition size to the "**Size (MB)**" value (else it will be estimated dynamically)
  - **Hide Boot Key:** "No" to show the message inviting the user to press a key to boot into the RP during "**Timeout (Sec)**"
  - **Create NTFS RP:** "Yes" to format the RP in NTFS filesystem
  - **RP at disk start:** "Yes" to create the RP at the start of the disk
  - **Visible:** "Yes" to make the RP visible (in Windows explorer for example)
  - **Change partition type:** "Yes" to change the partition type
- **Language:** Recovery solution language ("Auto" to let it dynamically detected)
- **Brand used:** To customize the recovery solution interface to as specific brand (logo…)

**Note:** Windows 10 does not allow for a separate Recovery Partition. The two viable options for Windows 10 are "No recovery" and "No Recovery solution, use only original image disk typology".

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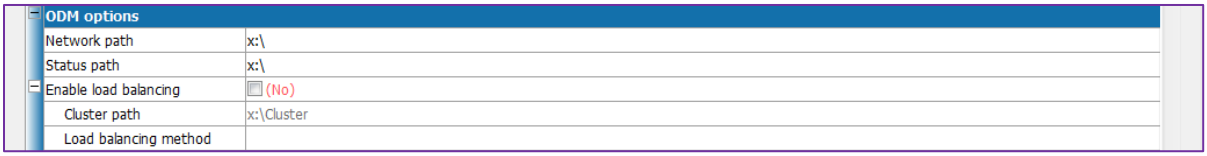
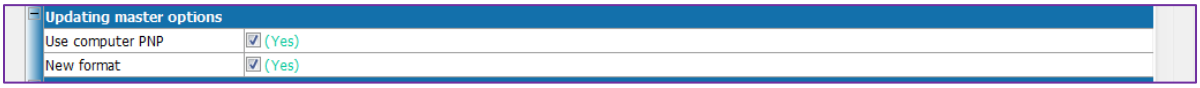
### ODM option



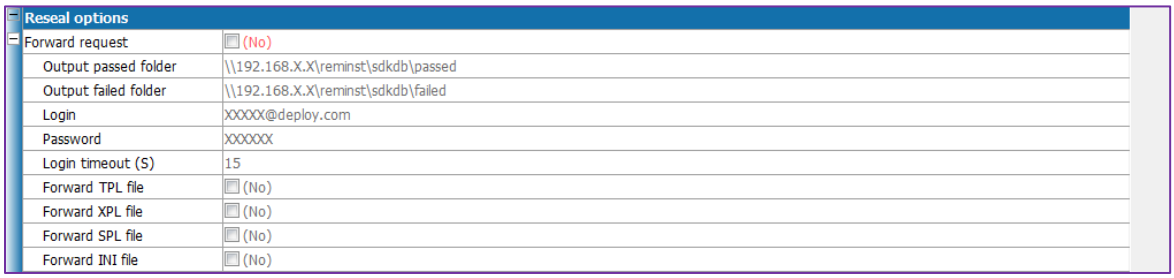

- **Network Path:** Drive letter where the root of the deployment files is located
- **Status Path:** Path where deployment status will be saved. Depending on pass or fail status, different info will be saved here
- **Enable Load Balancing:** Allows mapping to a different server if primary server is too busy
  - **Cluster path:** Path where network cluster is located
  - **Load Balancing method:** Alternate Load balancing method

### Updating master options




- **Use Computer PNP:** Use all PNP that can be detected on the PC. If no, use only the driver from selector.ini
- **New Format:** Leave this setting set to 1. Changing this will remove the benefit of the new database format

### Reseal options




- **Forward request:** Send reseal information to the server
  - **Output passed folder:** Storage location for machine-specific info from target system after reseal occurs in audit mode successfully
  - **Output Failed folder:** Storage location for machine specific info from target system after reseal occurs in audit mode with failure
  - **Login / Password:** Credentials to log onto server
  - **Login timeout:** Time to wait before retry to login
  - **Forward TPL file:** Include TPL file as part of info to send to server
  - **Forward XPL file:** Include XPL file as part of info to send to server
  - **Forward SPL file:** Include SPL file as part of info to send to server
  - **Forward INI file:** Include INI file as part of info to send to server

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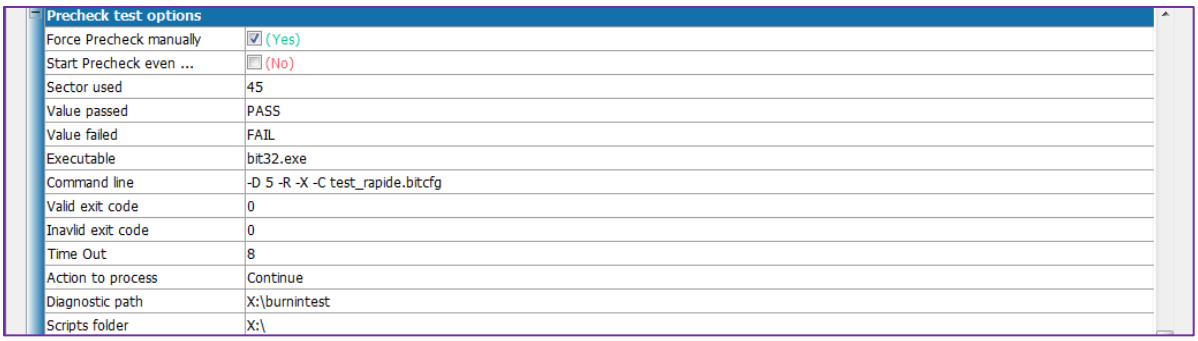
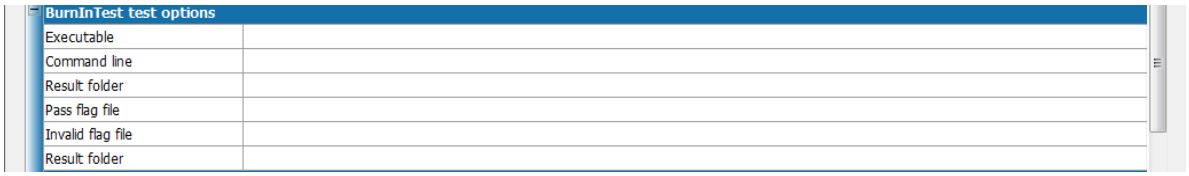
### Precheck test options



| Precheck test options | |
|---|---|
| Force Precheck manually | (Yes) |
| Start Precheck even ... | (No) |
| Sector used | 45 |
| Value passed | PASS |
| Value failed | FAIL |
| Executable | bit32.exe |
| Command line | -D 5 -R -X -C test_rapide.bitcfg |
| Valid exit code | 0 |
| Inavlid exit code | 0 |
| Time Out | 8 |
| Action to process | Continue |
| Diagnostic path | X:\burnintest |
| Scripts folder | X:\ |

- **Force Precheck manually:** Allow to start Precheck test manually
- **Start Precheck even if a disk is absent:** Start Precheck even if is a disk is not plugged to the device
- **Sector used:** Sector on the HDD where is stored the test status
- **Value passed:** Value written to the sector when the diagnostics pass
- **Value failed:** Value written to the sector when the diagnostics fail
- **Executable:** Executable to launch for the diagnostic tests
- **Command Line:** Switches for the executable
- **Valid Exit Code:** Exit code for "PASS" condition of the diagnostics
- **Invalid Exit Code:** Exit code for "FAIL" condition of the diagnostics
- **Action to Process:** If test passes, continue deployment
- **Diagnostic path:** Location of the files used for diagnostics
- **Scripts folder:** Location of the diagnostics scripts

### BurnInTest test options



| BurnInTest test options | |
|---|---|
| Executable | |
| Command line | |
| Result folder | |
| Pass flag file | |
| Invalid flag file | |
| Result folder | |

- **Executable:** BurnInTest executable to launch
- **Command Line:** BurnInTest executable command line arguments
- **Result Folder:** Location where BurnInTest results are stored
- **Pass flag file:** Flag file created for pass condition
- **Invalid flag file:** Flag file created for fail condition
- **Result Folder:** Folder where previous flags file will be present

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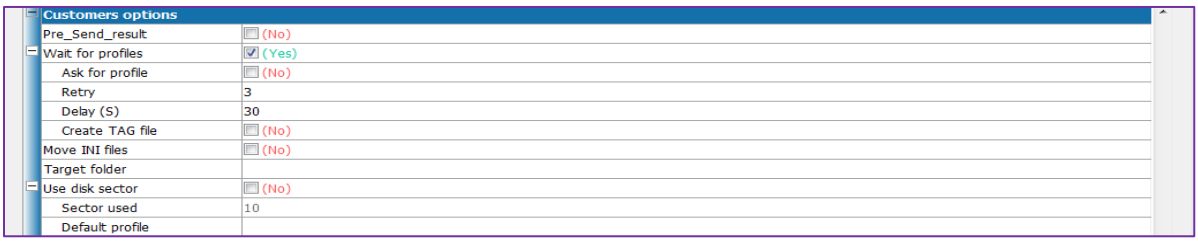
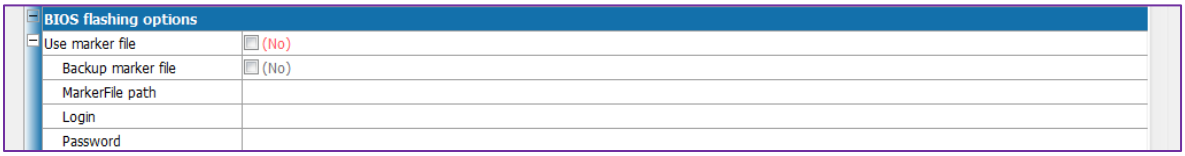
### Customer options




- **Pre_Send_Result:** Send info to server during reseal operation. S<serial>.log files are then duplicated in TP/TF folder for pass/fail results
- **Wait for profiles:** Wait for deployment INI files to becoming available
    - **Ask for profile:** Ask for the profile to use at run time through a popup (ex: if DMI is not set correctly)
    - **Retry:** Retry attempt before failing
    - **Delay (S):** Retry delay between each try
    - **Create TAG file:** Create serial number tag file if the profile is not present at startup to ask to a third party soft to give it available
- **Move INI files:** Move Selector.ini & Rsselect.ini to the « **Target folder** » location after deployment (this target folder must be a local path on the RIS)
- **Use disk sector:** Use a disk sector with the DMI to validate the profile to use
    - **Sector Used:** Sector id where to check for the serial or model number (9 to 62)
    - **Default profile:** Default profile to use if the signature does not match

### BIOS flashing options




- **User Marker File:** Force the use of a marker file instead of the disk itself to log BIOS flashing. The file is located in BIOS\TEMP\BIOSxxxxx.TBIF
    - **Back up Marker File:** Move the TBIF file into a sub folder "DONE" for backup purposes when all flashing operations have processed. These files will overwrite if a collision occurs
    - **Marker file path:** Marker file path
    - **Login / Password:** Credentials to access to the Marker file path above

### PC Angel

**No longer used.**

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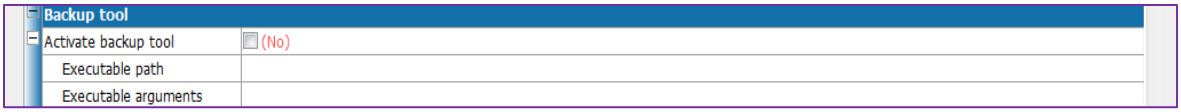
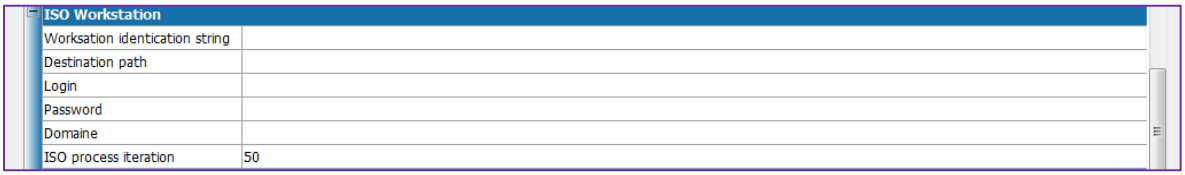
### Backup tool



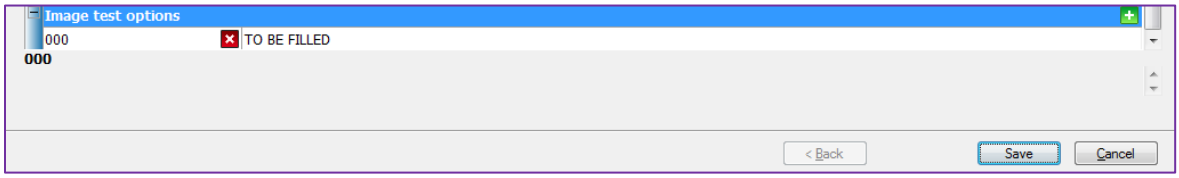

- **Activate backup tool:** Enable the possibility to launch a backup tool before deploying an image
  - **Executable path:** Backup tool executable path
  - **Executable arguments:** Backup tool executable command line arguments

### ISO Workstation




**No longer used.**

### Image test options




**No longer used.**

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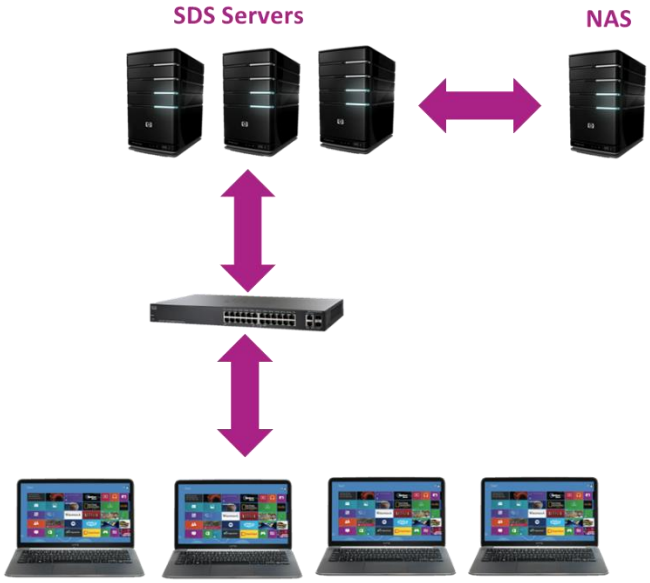
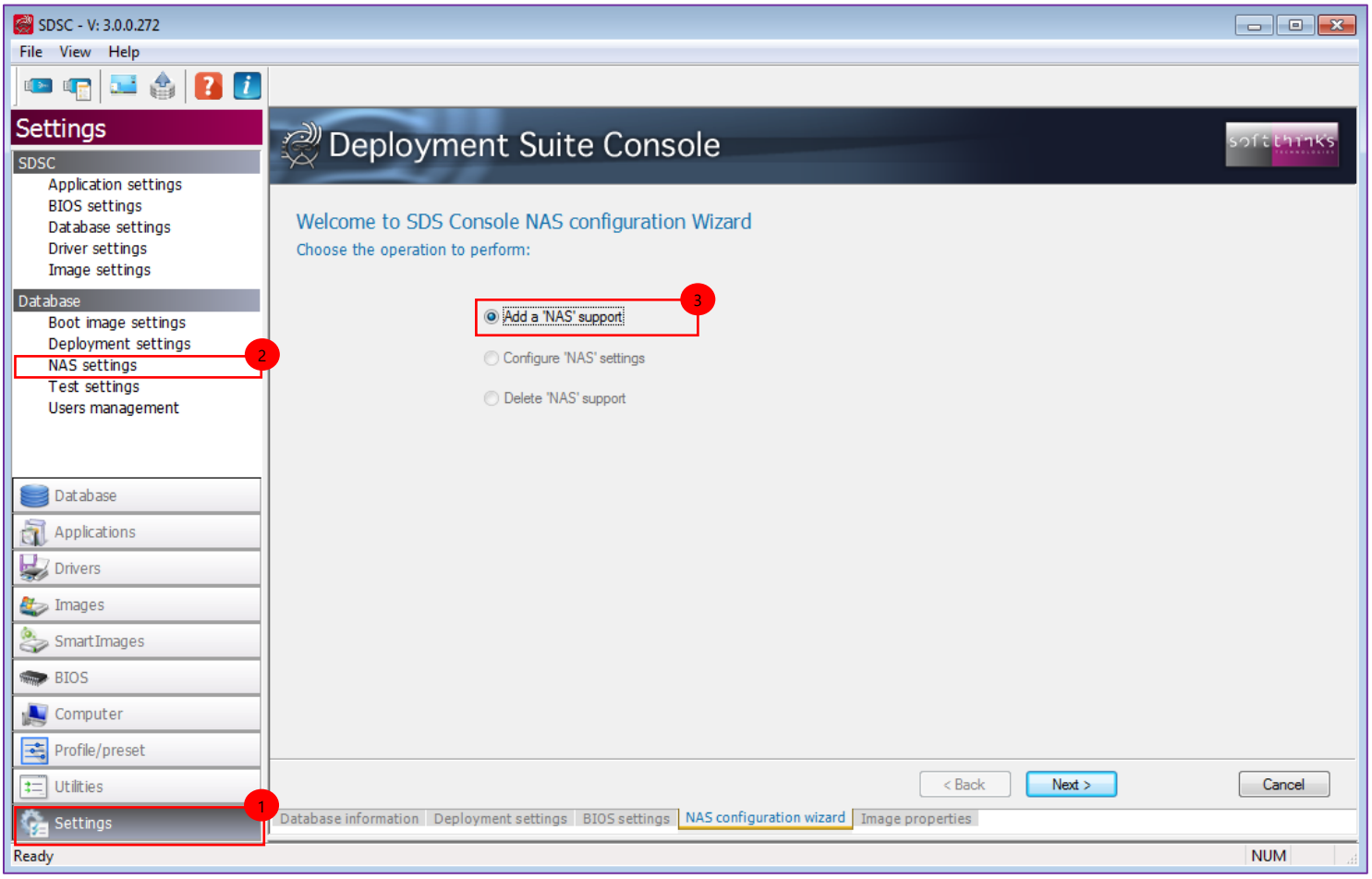
## NAS settings

Potential NAS Configuration. Setup can vary depending on your needs:




1. Click on the “Settings” tab 1
2. Click on “NAS settings” 2

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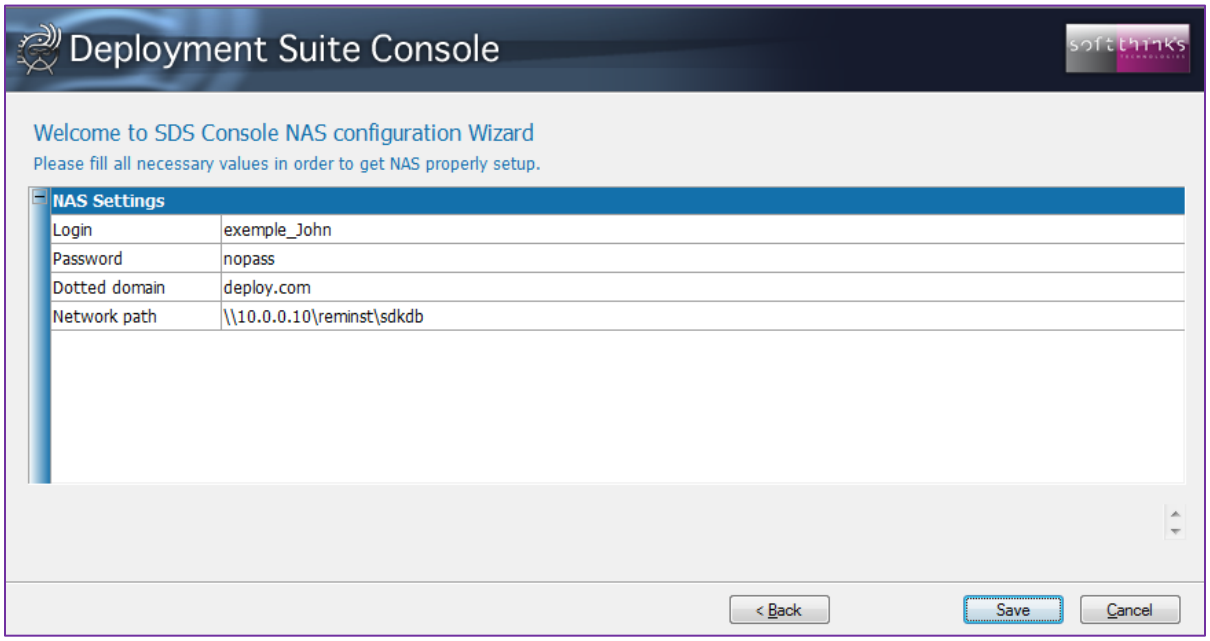
### Add a 'NAS' support

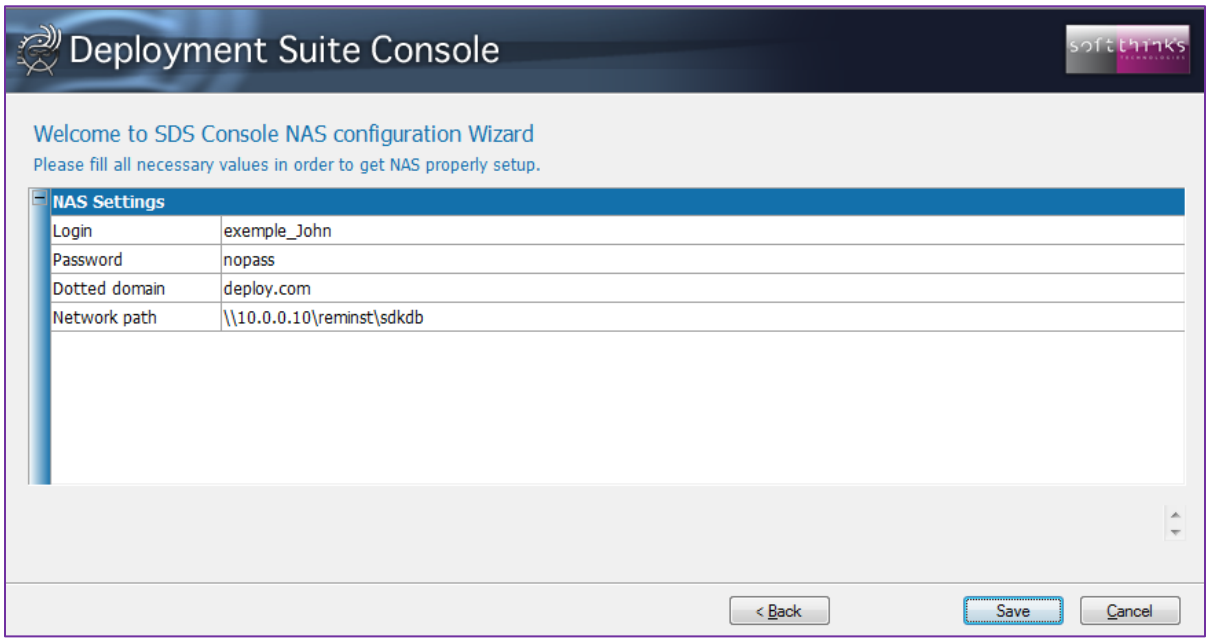
Since you can configure only 1 NAS, only the option "Add a 'NAS' support" 3 is available initially. After having selected this option and clicked on the "Next >" button, you will be able to fill in all of the necessary information required to get the NAS properly setup:




- **Login / Password:** Credentials to connect to the NAS
- **Dotted domain:** Dotted domain name where the network share is
- **Network path:** Sharing UNC path used to deploy (please use IP address only)

### Configure 'NAS' settings

Once a NAS has been setup you can choose the option "Configure 'NAS' settings" in order to review or edit its settings as in the previous screenshot:

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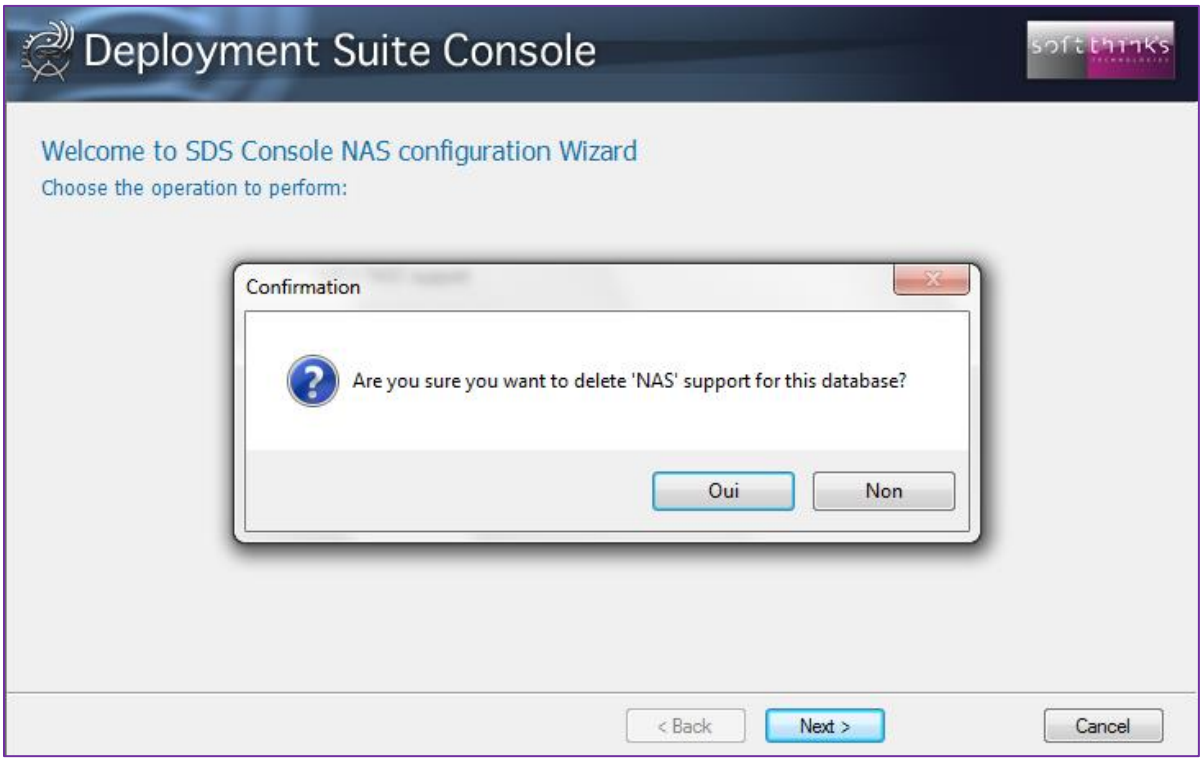
### Delete ‘NAS’ support

You can delete a NAS previously setup with the “Delete ‘NAS’ support” option which will ask you to confirm:

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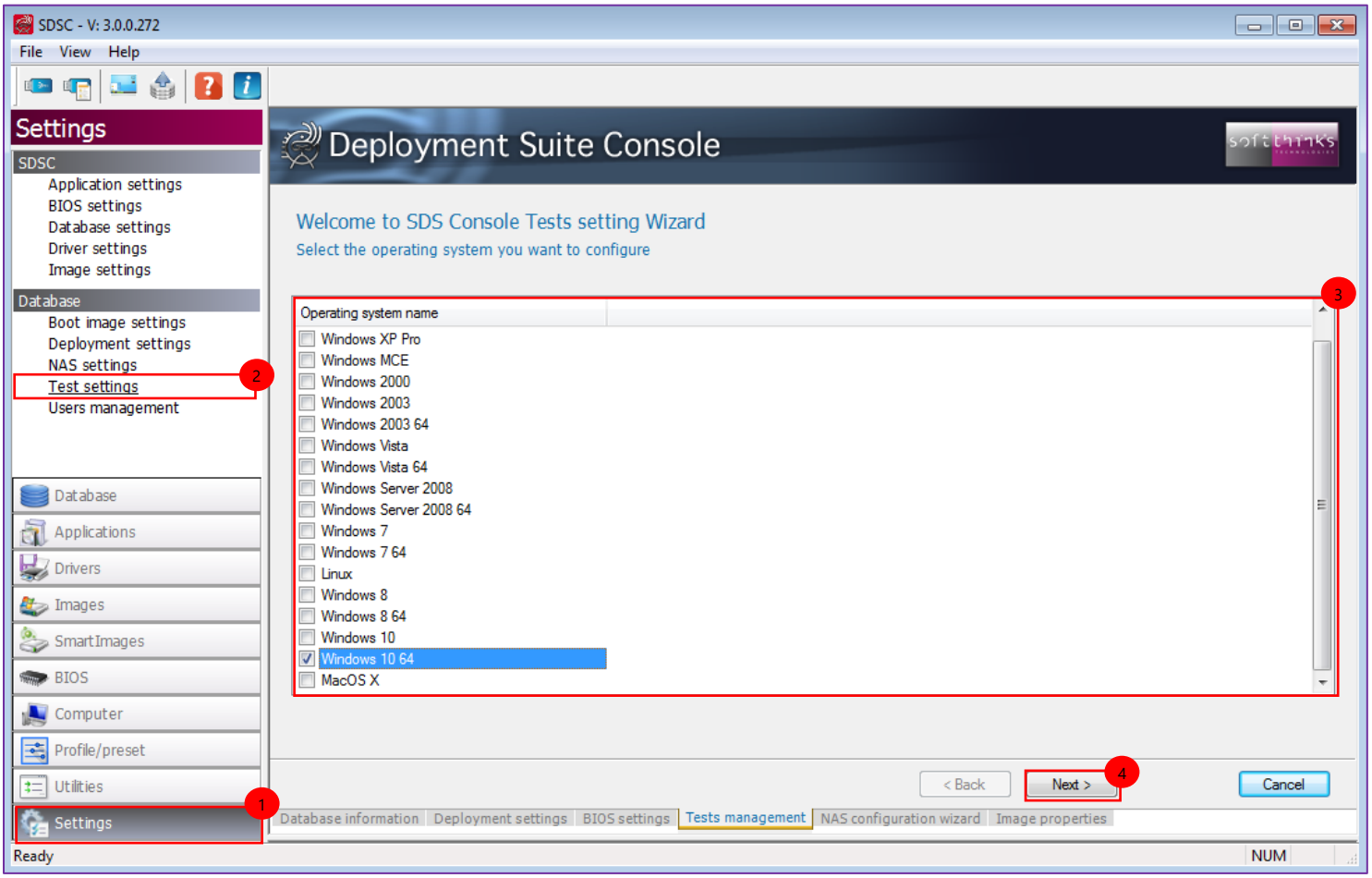
## Test settings

The SDS Console Tests settings wizard allows you to customize the tests run during the Quality Check depending on the operating system.

1. Click on the “Setting” tab 1
2. Click on “Test settings” 2
3. Select the operating system for which you want to configure the tests 3
4. Click on the “Next >” button 4

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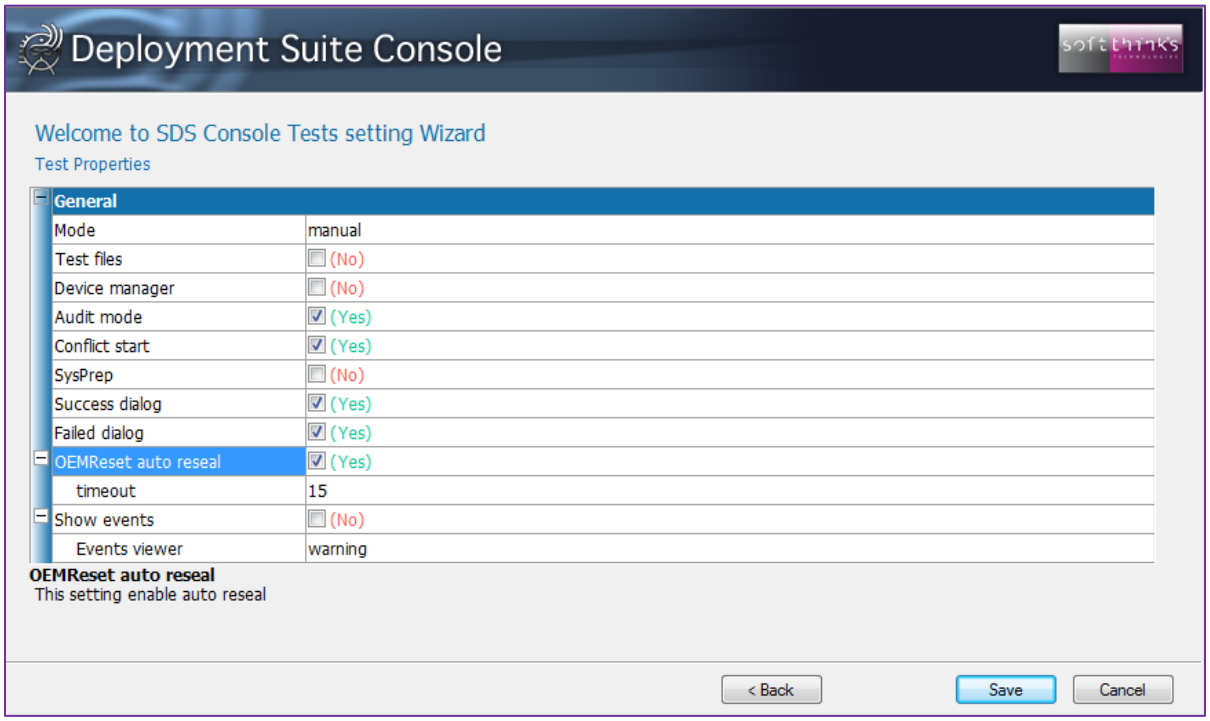
General




- **Mode:** "manual" to configure the tests at run time, or "auto" to run all tests automatically
- **Test files:** "Yes" to check the drivers' signature ("No" by default)
- **Device manager:** "Yes" to open the device manager if an error is detected ("No" by default)
- **Audit mode:** "Yes" (by default) to start the tests in audit mode
- **Conflict start:** "Yes" (by default) to start the tests if conflicts are detected in Windows Test Manager
- **Sysprep:** "Yes" to show Microsoft Sysprep button (No longer used. Do not check)
- **Success / Failed dialog:** Show a report dialog if test succeeded / failed
- **OEMReset auto reseal:** Automatically reseal the device at the end of the tests after "**timeout**" (Deprecated)
- **Show events:** Open the event viewer with the filter specified by the "**Events viewer**" value ("information" / "warning" / "error")

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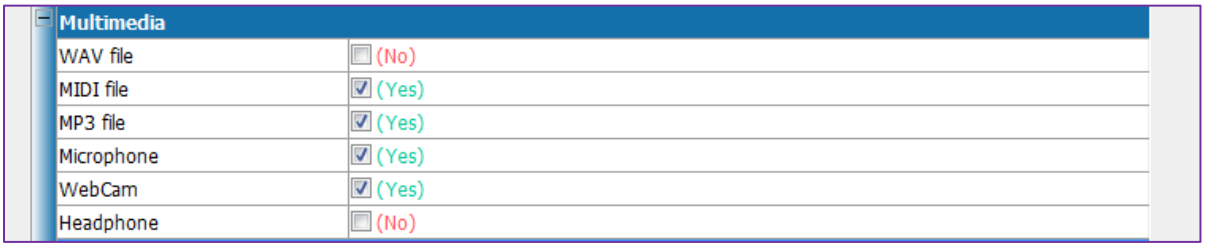
### Multimedia




- **WAV files:** Test WAV file
- **MIDI files:** Test MIDI file
- **MP3 files:** Test MP3 file
- **Microphone:** Test the microphone
- **Webcam:** Test the webcam
- **Headphone:** Test the headphone

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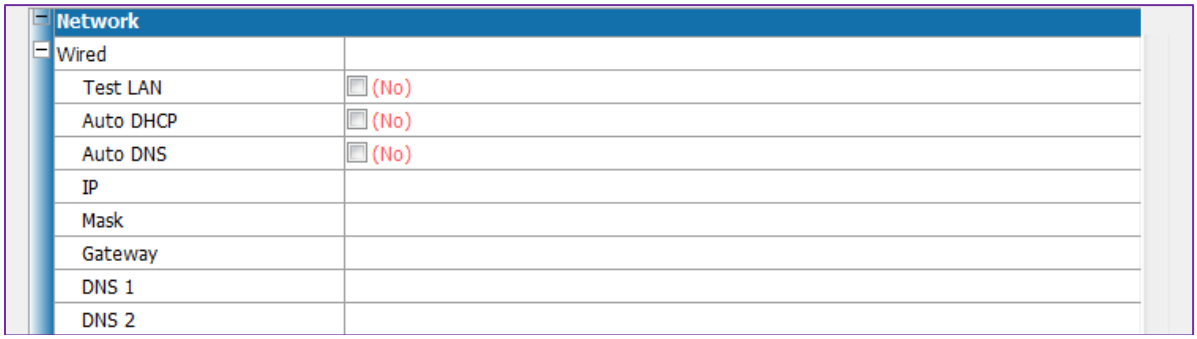
Network

- **Wired**




  - **Test LAN:** "Yes" to test the wired connection
  - **Auto DHCP:** "Yes" if using DHCP server
  - **Auto DNS:** "Yes" if using DNS server
  - **IP:** IP address to set if you don't use DHCP
  - **Mask:** Subnetwork mask to set if you don't use DHCP
  - **Gateway:** Gateway to set if you don't use DHCP
  - **DNS 1:** Primary DNS server to set if you don't use DHCP
  - **DNS 2:** Secondary DNS server to set if you don't use DHCP

- **Wi-Fi**

  - **Test WLAN:** "Yes" to test the Wi-Fi connection
  - **SSID:** Wi-Fi SSID
  - **Authentication: "**Open", "Shared", "WPA" , "WPAPSK", "WPA2" , "WPA2PSK", "WPA3", "WPA3Ent", "WPA3Ent192", "WPA3SAE", "OWE"
  - **Encryption:** "None", "WEP", "TKIP", "AES", "GCMP256"
  - **Key:** Encryption key

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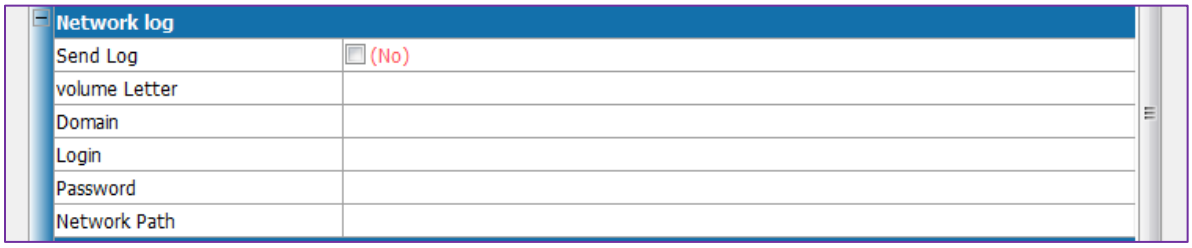
### Network log

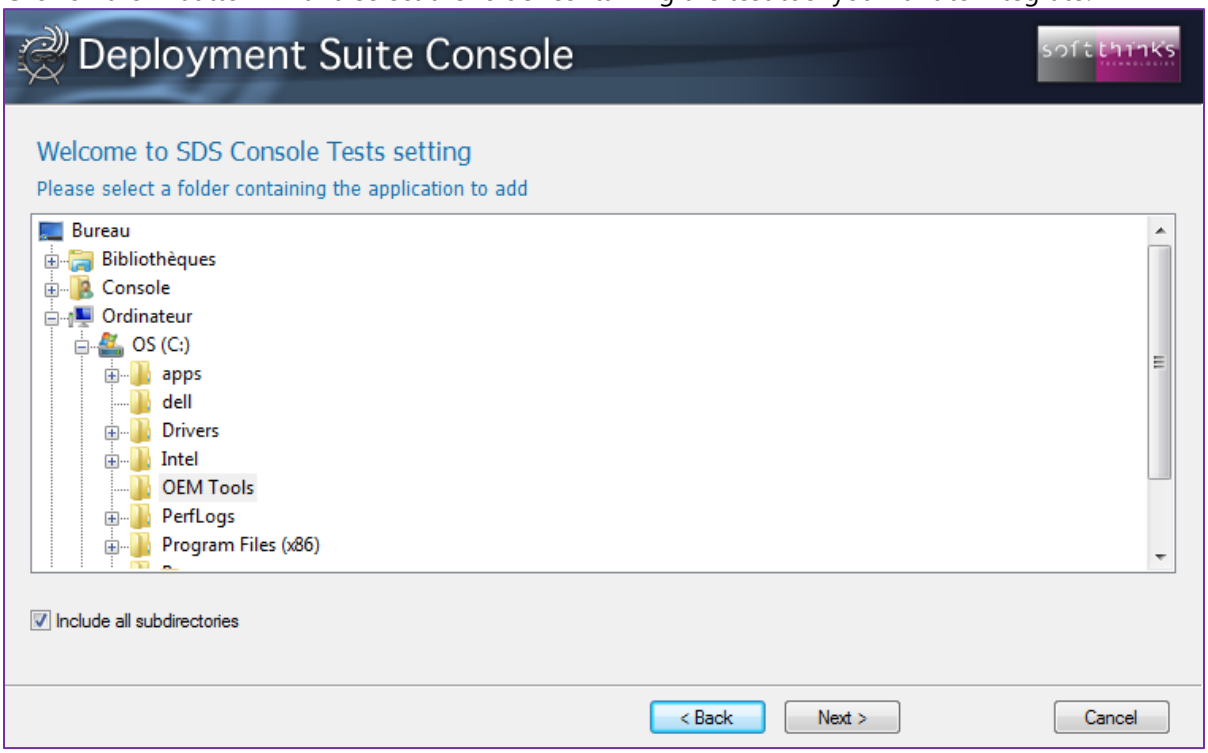



- **Send log:** "Yes" to send the logs to the SDS server
- **Volume letter:** Letter to which is mapped the SDS server share folder where logs have to be sent
- **Domain:** SDS Server domain name (Ex: « deploy.com »)
- **Login / Password:** Credentials to access the shared folder
- **Network path:** UNC path where logs have to be sent (Ex: \\192.16.0.17\remisnt\SDKDB\Logs)

### OEM

You can add your own tests here:

1. Click on the + button 4 and select the folder containing the test tool you want to integrate:

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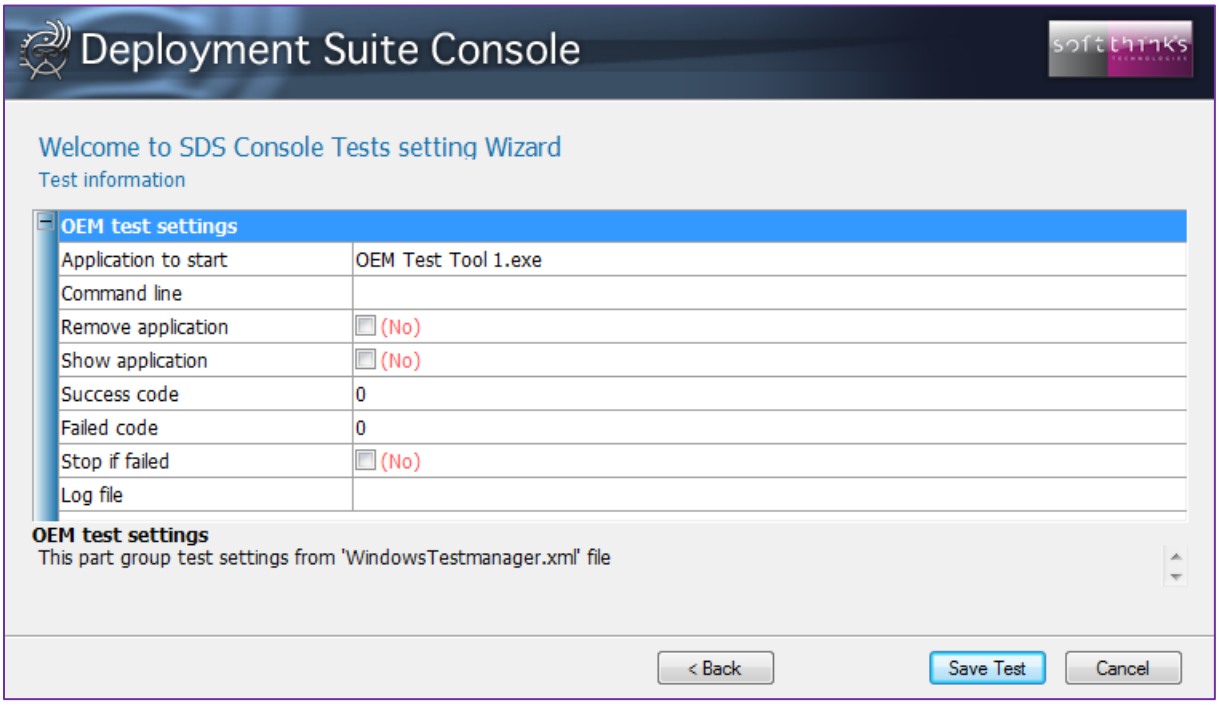
2. Fill the information required to launch your test tool and manage its result, and click on the « Save Test » button:




- **Application to start:** Executable to launch (.bat, .cmd or .exe)
- **Command line:** Executable command line arguments
- **Remove application:** "Yes" to remove the test tool after its execution
- **Show application:** "Yes" to show the test tool UI
- **Success code:** Value returned by the test tool in case of success
- **Failed code:** Value returned by the test tool in case of failure
- **Stop if failed:** "Yes" to stop the process if the test tool returned a failure
- **Log file:** Path where the test tool log is generated (will be sent with other logs if the "send log" option is checked)

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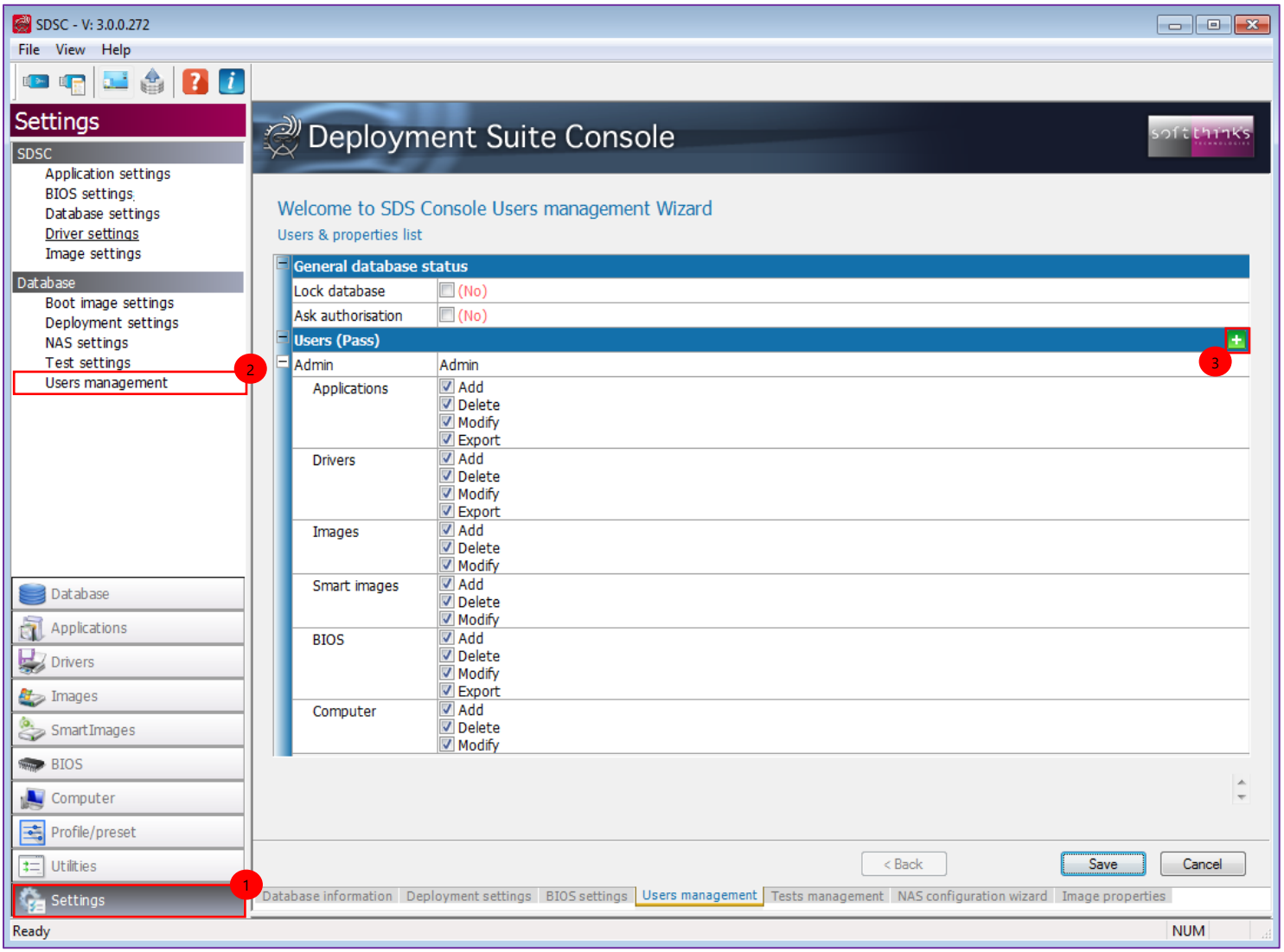
## Users management

This wizard allows you to restrict access to a database.

1. Click on the “Settings” tab 1
2. Click on “User management” 2




## General database status

- **Lock database:** Restrict the access to the database to the administrator only
- **Ask authorization:** Restrict the access to the database to selected users

## Users (Pass)

You can add a user by pressing the + button 3 and then define the user’s rights for Add, Delete, Modify and Export database components for each component category (Images, Smart Images, Applications, Drivers, BIOS).

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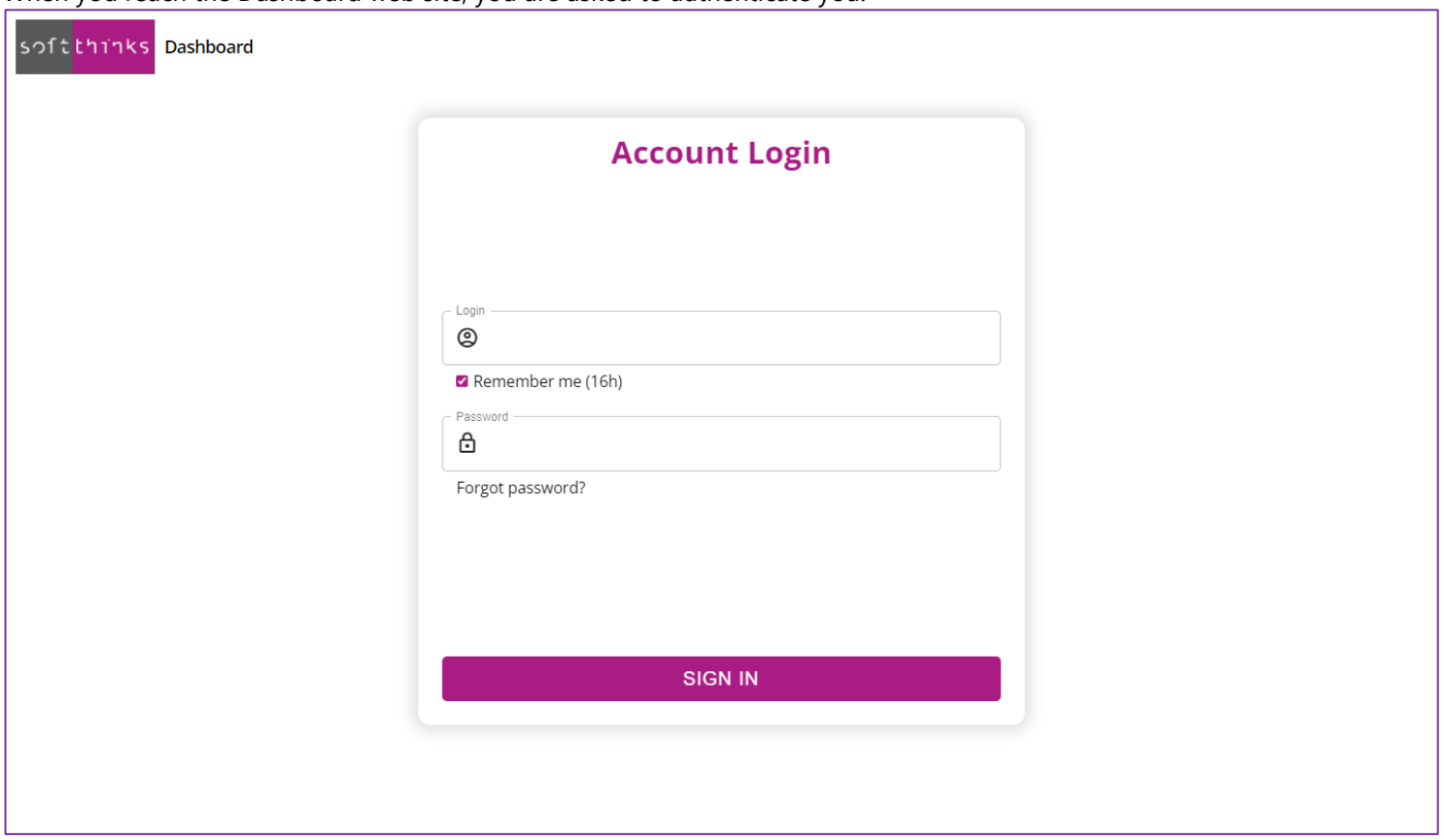
# Consulting the activities from all sites and generating reports through the Dashboard

The SDS Dashboard centralizes the statistics from all your sites, view the activity in real-time, and allows you to generate reports.

## Connection

When you reach the Dashboard web site, you are asked to authenticate you:




For users of the previous version, your credentials are the same.

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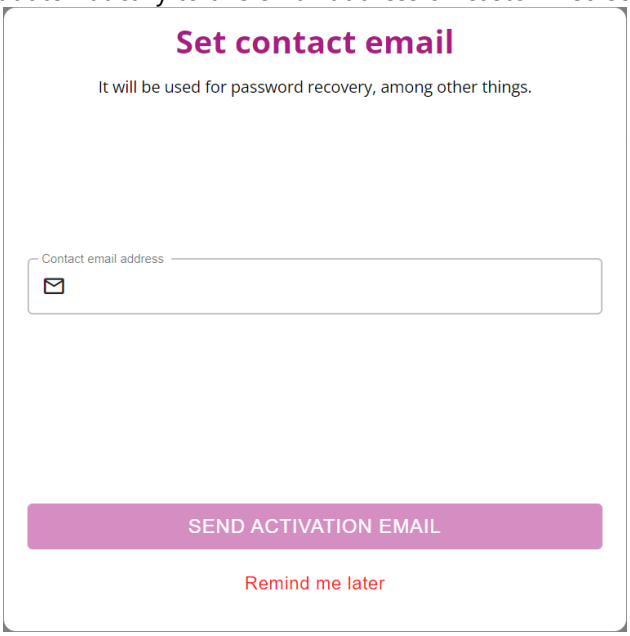
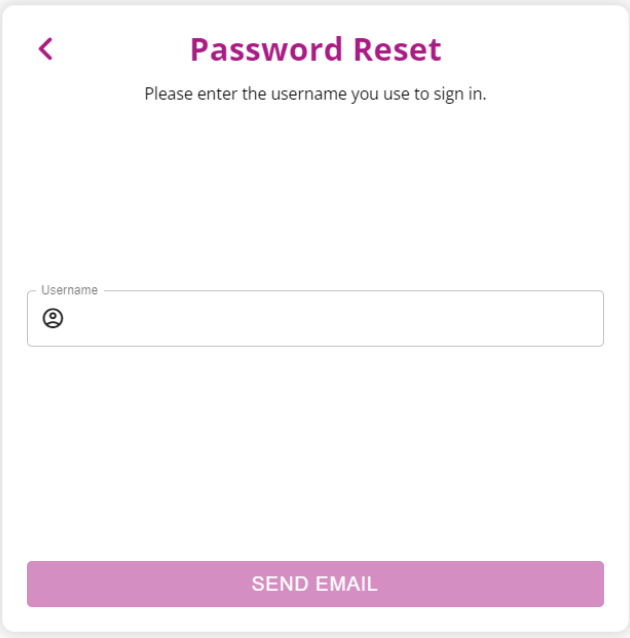
On first connection you might be asked to enter a contact email address which is required to reset your password, and for future functionalities (as reports sent automatically to this email address on customized schedule).




If you have forgotten your password, you can click on “Forgot password?” and a link will be sent to your contact email address to reset your password:




If you didn’t receive your credentials, please ask your contact at Softthinks.
With this version, you have now the possibility to stay connected for 16 hours, preventing you to enter your credentials again during this period.

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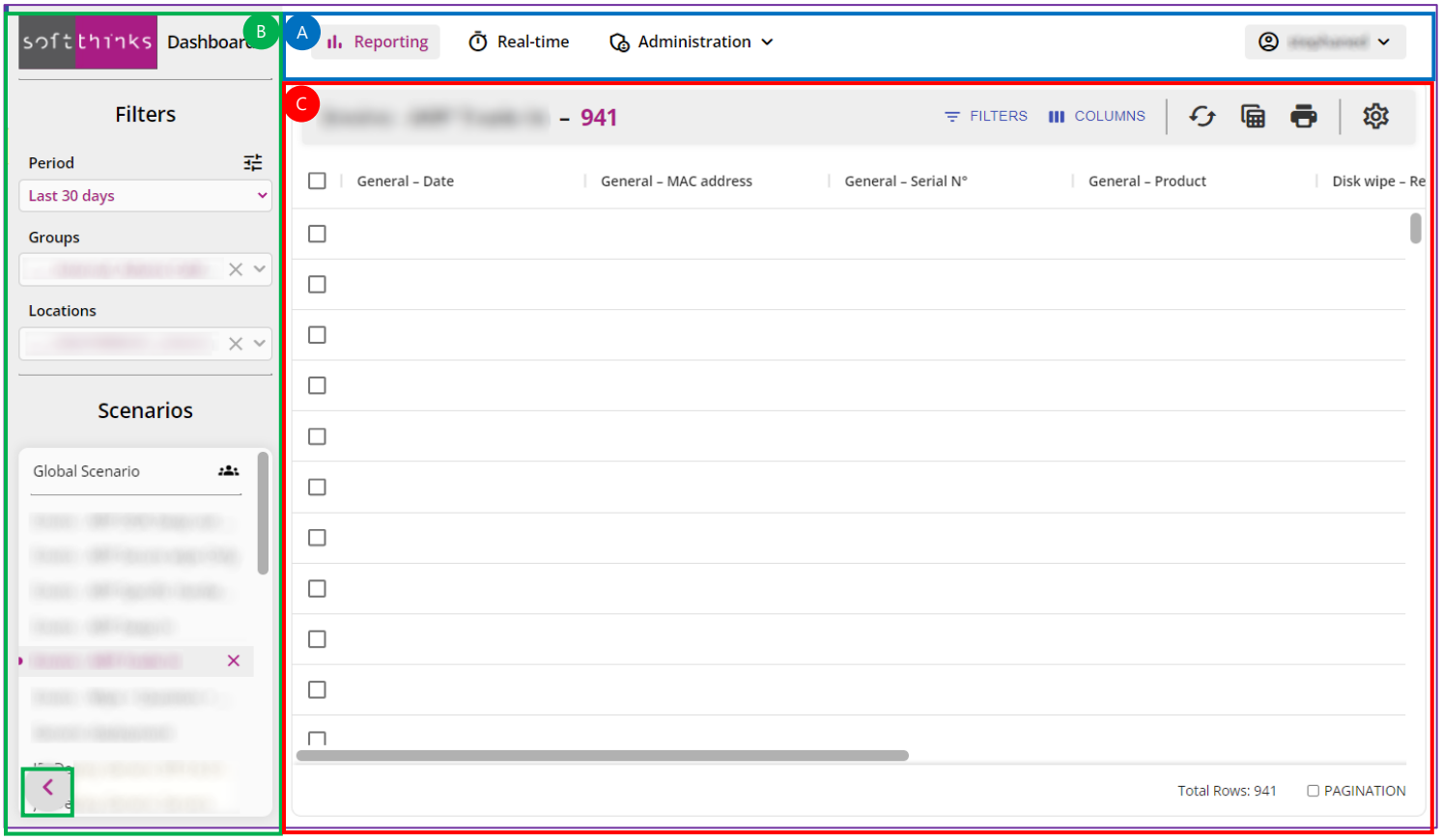
# Reporting view

Once you're logged in, you arrive to the main view.

This screen shows all the devices related activities made on all the sites you have selected:




The navigation bar A on the top allows you to navigate through the current "Reporting" view, the "Real-time" view, and the "Administration" tools (you might not see this last one depending on your account type). On the right, the dropdown menu , provides you access to your user settings and allows you to log out.

The left panel B allows you to select your main filters and scenario in this Reporting view. In order to increase the amount of data you can view in the main area, you can hide this left panel by clicking on the button at the bottom left. To show it again, just click on the button which is displayed then on the bottom left of the data area.

The data area C contains all SDS data matching the main filters and scenario you have chosen.

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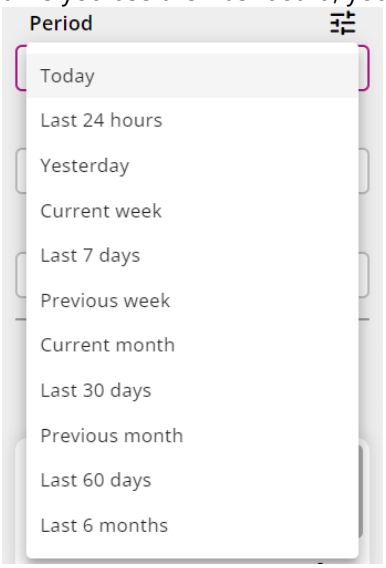
## Filters

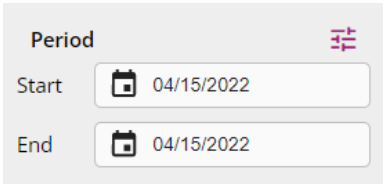
The left panel includes the most common filters that you will use.

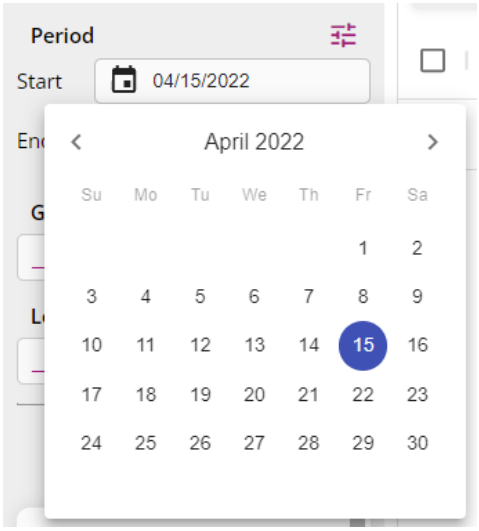
### Period

This filter defines the period of time for which you need statistics.
In order to avoid you changing the dates each time you use the Dashboard, you can use relative periods.




The 1st time you will connect, you will have a daily view but you can change to a weekly / a monthly (other filters will be added based on your needs). This filter will be kept for your future connections.
Anyway, if you need to define specific dates, you can enter them as in SDS Dashboard 1.0, by clicking on the button, and type the dates in your regional format (MM/DD/YYYY here) or use a calendar to choose them by clicking on icon:

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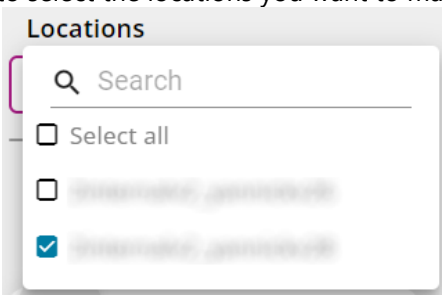
### Locations (administrators only)

If you are an administrator, you will be able to select the locations you want to manage:




By default, all the locations will be preselected. As for the groups filter above, you can search for locations and select/unselect multiple locations. Your selection will be saved so that you will not need to reselect them the next time you will use the Dashboard.
Else, this filter will be hidden and you will see the data from the location you are linked to.

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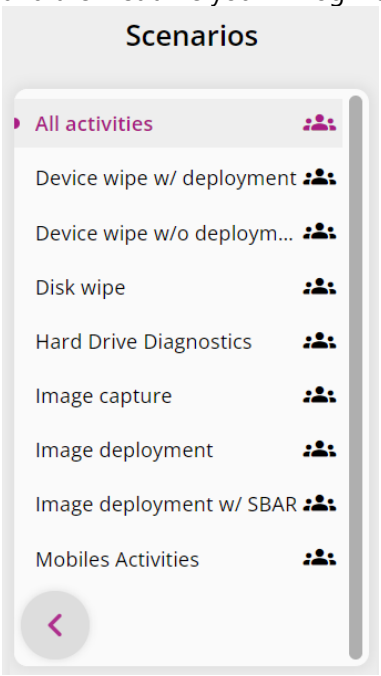
## Scenarios

The scenarios are workflows which usually match your different processes (subscripts). They are defined by a sequence of actions (« modules » in SDS vocabulary) for which you can filter on any data generated by those actions (as their result for example). By default, we provide the most common scenarios, which are shared with you as indicated by the pictogram, and the first time you will log into SDS Dashboard the « All activities » scenario will be preselected:




- ➔ display all activities whatever the process failed or passed (1 line per device)
- ➔ display all processes where the disks have been wiped and an image deployed (1 line per device)
- ➔ display all processes where the disks have been wiped and no image deployed (1 line per device)
- ➔ display all disks wipe process unitary (1 line per disk)
- ➔ display all disks diagnostics unitary (1 line per disk)
- ➔ display all image captures (1 line per device)
- ➔ display all image deployments (1 line per device)
- ➔ display all image deployments with SBAR installation and activation (1 line per device)
- ➔ display all mobiles activities (1 line per mobile)

When you select a scenario, it is highlighted as « All activities » one in the screenshot above, and the data are filtered as defined by this scenario. The columns are also adapted to the scenario chosen.
For the predefined scenarios, we already set the columns which make sense for each of them. For example, for Disk wipe scenario we will display all data relative to the disks and wipe process but not the wiping station information. Compared to Device wipe w/o deployment, Device wipe w/ deployment will add the data relative to the deployment... Of course, you can decide to add/remove and reorder the columns and they will be restored when you will access the Dashboard the next time and when you switch between scenarios.

You can use those predefined scenarios as they are, or use them as templates to customize to you needs. For example, if you want to see only the successful disk wipes. Instead of creating the scenario from scratch, you can duplicate the predefined one and just add a condition on the wipe process result.

When you create or duplicate a scenario, the new one is private (only you can see it) by default and will appear without the pictogram. You can decide later to share with the other group administrator, if any, or with all other people of you group.

For more details on scenarios' creation, edition and management, please consult the dedicated chapter.

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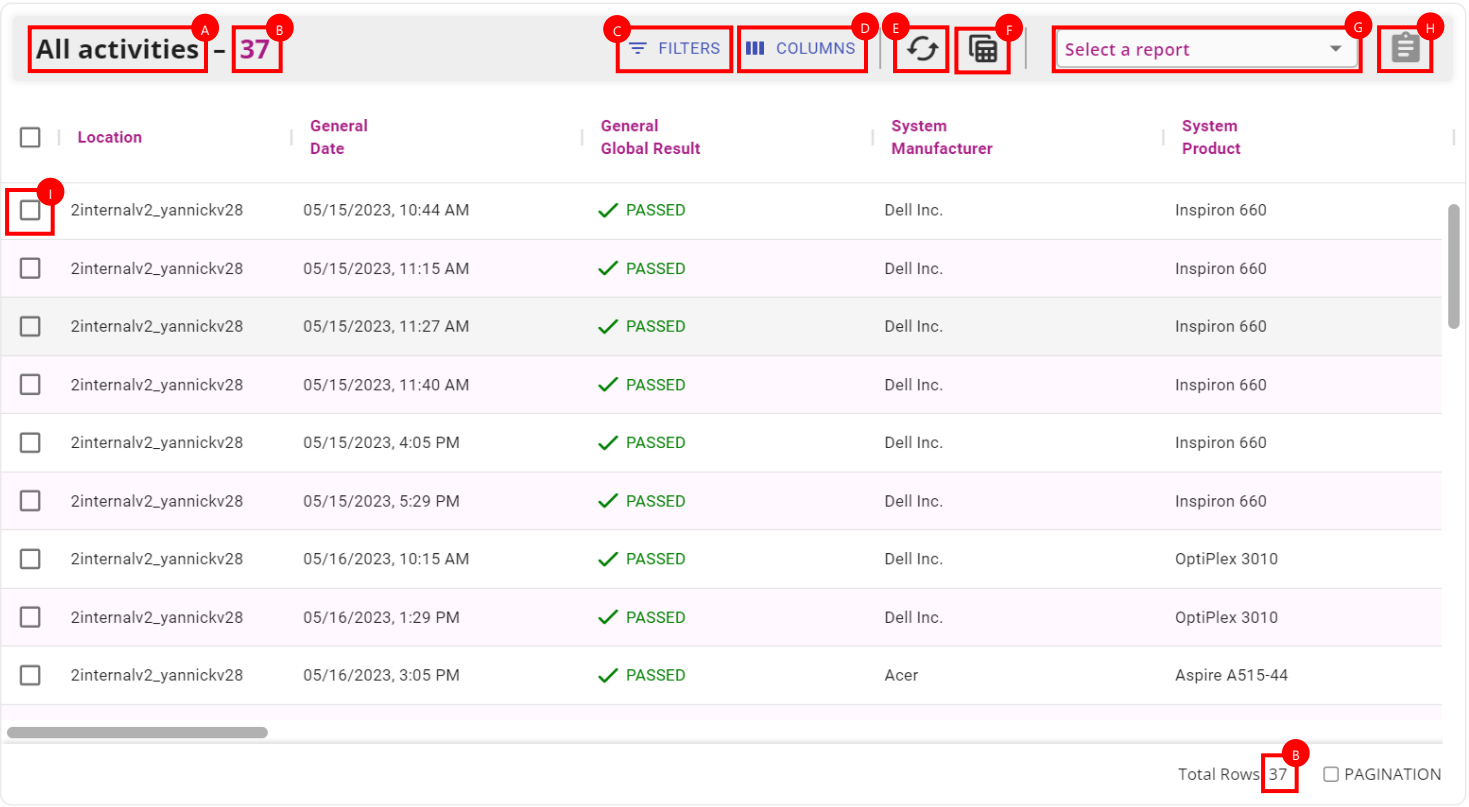
### Data

One you have selected your scenario, the data matching this scenario are displayed with the columns predefined or customized by you:




All the data stored in SDS SQL database are accessible through the Dashboard v2 and are interpreted and colored for better readability.
You can also add columns which are not linked to a specific database attribute but to several ones to provide synthesis. For example, if you are using SDS diagnostics you have the possibility to display individually the result of each test as they are stored in the database, and/or you can add a column “Tests failed list” that lists directly all the tests which failed, allowing you to quickly get his list instead of checking one by one all tests’ result. In the same way you can add “Nb tests run”, “Nb tests passed” and “Nb test failed” columns allowing you to quickly obtain statistics on the diagnostics through filters.
You will see on next chapter how to add / remove and reorder the columns.

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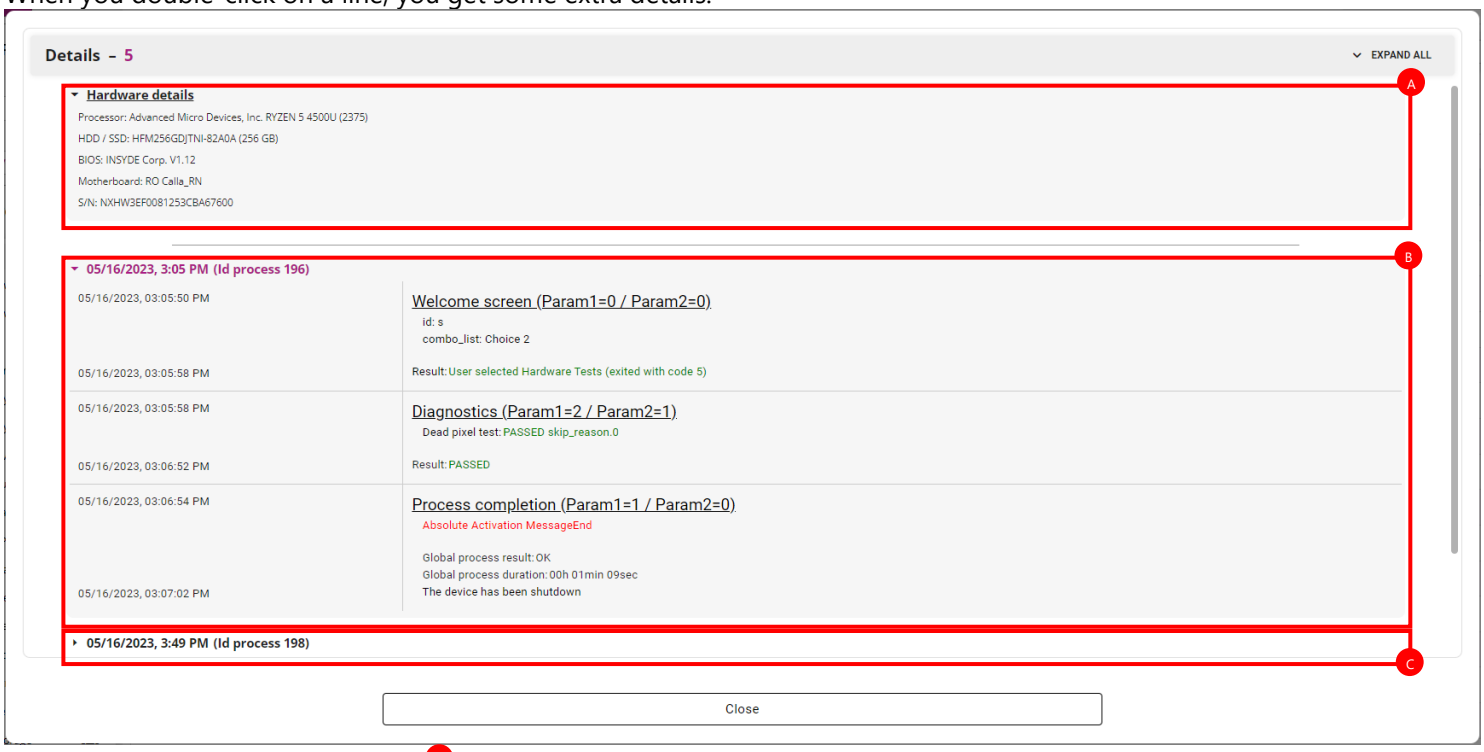
When you double-click on a line, you get some extra details:




You have first a hardware summary (A) and then the whole history of the device (from the newest intervention to the oldest one). In our example above, you can see that the device has been processed the 05/16/2033 at 3:50 PM (B), and also at 3:49PM the same day (C).

This history view list all the interventions made on the device wherever they have been done (in lab with SDS, on site with Nomad Disk, in shop with SDS kiosk…). For each process, you see all the main actions and their results. In our example, we displayed the welcome screen and the user decided to run diagnostics (“User selected Hardware Tests”), then he selected the Dead Pixel Test which passed and we finally displayed the final end screen and shut downed the device.

This is useful when you have to process a device to know what has been done on it previously and avoid wasting time for example if tests have already made on site/shop.

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Toolbar

In the toolbar on the top, the scenario selected A is indicated, as well as the number of records B which are matching the current date / location filters and scenario.
On the right you have the FILTERS C and COLUMNS D buttons allowing you to apply filters and manage the columns respectively. Then, you have the button E to refresh the data and another one
The button F exports all the data to an Excel spreadsheet.

The button H dedicated to the reports generation becomes enabled when you select a report in the dropdown list G on his left and some/all records through the checkbox ☐ / ☑ on front of them I.

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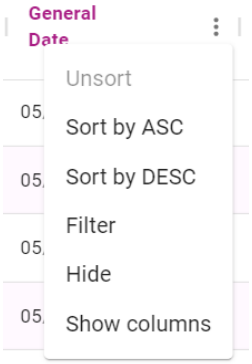
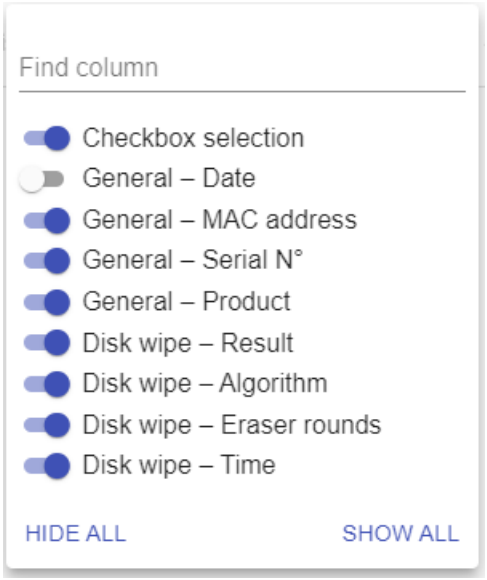
When you move your mouse over a column header (“General – Date” in our example above), 2 pictograms appear allowing you to interact with the column contents:
The ↑ pictogram A allows you to invert the sort order of all the data based on this column. In our example, the data are originally sorted from oldest processes to newest ones. If you click on the “General – Date” ↑ pictogram, the data sort will be inverted from newest ones to oldest ones and the pictogram will be updated to reflect this change: ↓.
Clicking on the ⋮ pictogram B raises a pop-up contextual menu:




In this menu, you can:

- switch the sort order
- add a filter on this column (see next chapter)
- hide the column
- decide which columns to show or hide:




You can also manage the columns through the COLUMNS button D which open the dialog box below:

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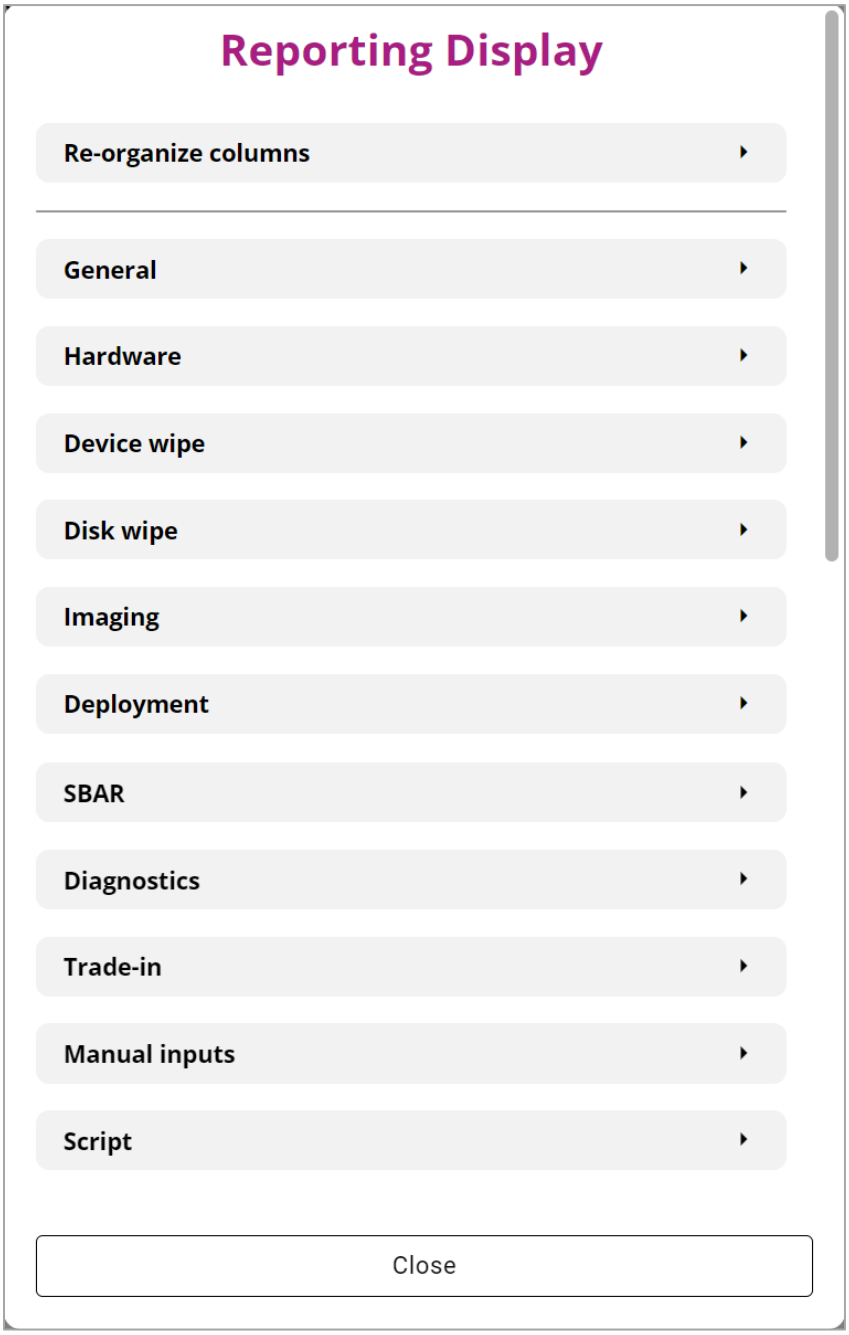


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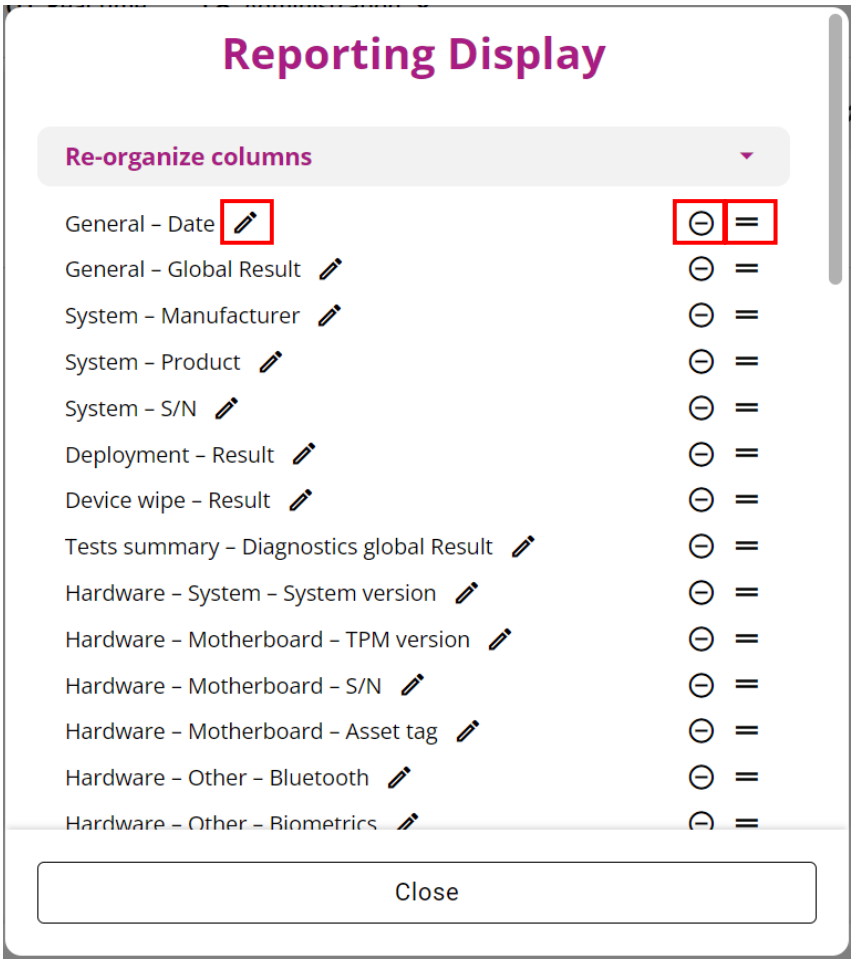
Expand « Re-organize columns » item to list the columns currently displayed, rename them (✎), remove them (⊖) and re-order them (=):

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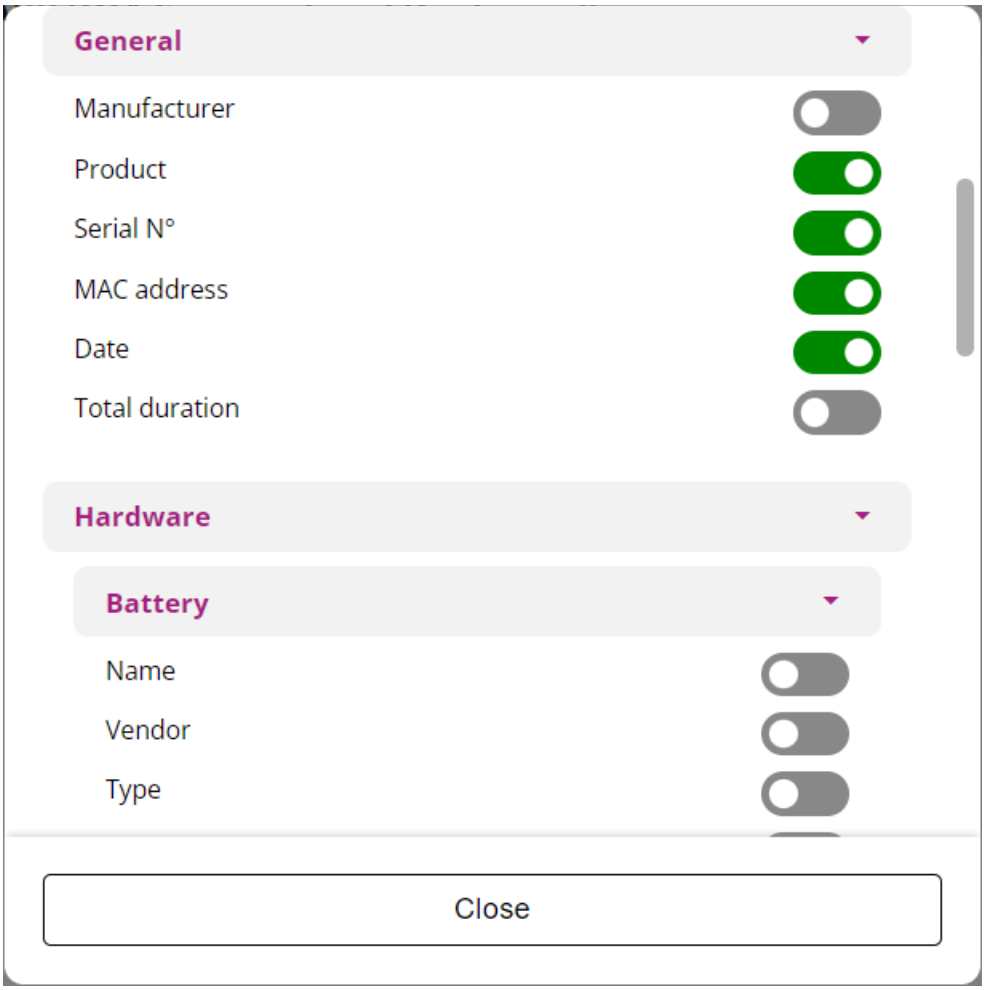
To add data, click on one of the categories (and even sub-categories for the hardware) into which they are grouped to make their selection easier regarding the large amount of data available, they are grouped by category:




### Columns list

Here below the detailed list of all categories, sub-categories and columns:

#### *General*

Date
Id process
Global result

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- Hardware
  - *System*
    - Manufacturer
    - Product
    - S/N
    - UUID
    - SKU
    - Chassis
    - System version
  - *CPU*
    - Manufacturer
    - Model
    - Socket
    - CPUID
    - Base frequency
    - Maximum frequency
    - Cores
    - Threads
    - L1 cache
    - L2 cache
    - L3 cache
  - *RAM banks*
    - Total amount
    - Total slots
    - Free slots
    - Form factor
    - Manufacturer
    - Type
    - Speed
    - Size
    - S/N
    - Asset tag
    - Part number
    - Rank
  - *Disk*
    - Nb disks
    - Total size
    - Manufacturer
    - Model
    - Commercial size
    - Real size
    - Type
    - Firmware
    - S/N
    - Connector

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- Bus
- Universal identifier (WWN)
- PPID
- Health
- Reallocated sectors
- Bytes per sector
- HPA
- DCO
- RPM

*Motherboard*

- Manufacturer
- Model
- Version
- S/N
- Asset tag
- TPM version

*BIOS*

- Manufacturer
- Version
- Date

*Video card*

- Model
- Driver

*Network card*

- Manufacturer
- Model
- Type
- PnP
- MAC address
- Driver

*Sound card*

- Manufacturer
- Model
- PnP
- Driver

*Screen*

- Manufacturer
- Model
- Size
- Resolution
- S/N
- Touchscreen
- Driver

*Disk Controller*

- Manufacturer

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- Model
- PnP
- Driver

*Webcam*

- Model
- PnP
- Driver

*Battery*

- Manufacturer
- Model
- Type
- Designed capacity
- Full charge capacity
- Rate
- Power state
- Current capacity
- Voltage
- Cycle count
- Serial number
- Wear level

*Optical drive*

- Manufacturer
- Model
- Firmware
- Media

*Other*

- Bluetooth
- Biometrics
- Card reader

Device wipe

- Result

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Disk wipe

- Result
- Protocol
- Eraser rounds
- Duration
- Disk manufacturer
- Disk model
- Disk commercial size
- Disk S/N
- Disk health
- Disk UUID
- Bytes per sector
- Customer data
- Reallocated sectors
- Power on hours
- Reported uncorrectable errors
- Command timeout
- Current pending sector count
- Offline uncorrectable

Imaging

- Result
- Image name
- OS version
- OS architecture
- Used space

Deployment

- Result
- Image deployed
- OS deployed
- Duration

SBAR

- Activation code
- Activation type
- Activation result
- Image type

Diagnostics

*Tests summary*

The “Tests summary” subcategory allows you to display, filter and report a synthesis of the tests run:

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Diagnostics global result
Nb of tests run
Nb of tests passed
Nb of tests failed
Tests failed list

*Common*

Test comment

Right after you have 1 subcategory per device, and for each of them the different tests possible:

*CPU tests*

Full test
General purpose instructions
Floating point unit instructions
Prime number test
Maximum heat
…

*Memory tests*

*Storage tests*

*Mainboard tests*

…

### Trade-In

The Trade-In category contains data relative to Trade-In module (SDSTradeIn), meaning the Trade-In code or grading so far:

*Code*

### Manual inputs

*Welcome screen*

You find in “Welcome screen” subcategory the fields present in the Welcome screen (SDSWelcome module). You can specifically select (and then move) the fields which have a dedicated SQL_ID defines (in SDSWelcome.ini). Other fields will be grouped all together in the “Other manual inputs” item, meaning that all are visible, or else none of them, and, is the same way, you will move those columns all together.

*Questions form*

As for Welcome screen data, the data from the Questions form (SDSQuestion module) can be shown and moved unitary when they are associated to a dedicated SQL_ID in QuestionDefinition.txt, or all grouped together in “Other questions” for the others.

*Script*

Script columns are relative to the data set through the script (through SEND_EVENT keyword), and other data stored in MODULE table.

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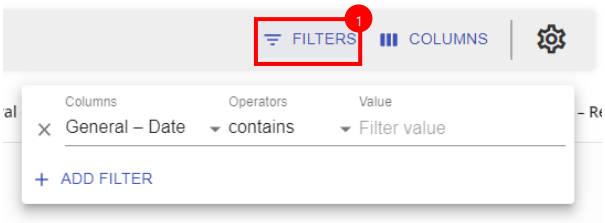
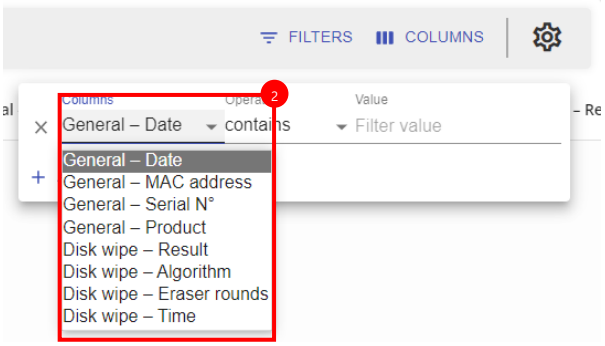
### Filters

You can add as many filters as you want to obtain the exact data you are searching for (like in the Search view of SDS Dashboard 1.0):

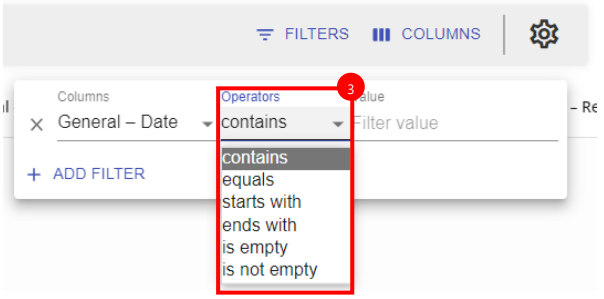
1. Click on FILTERS



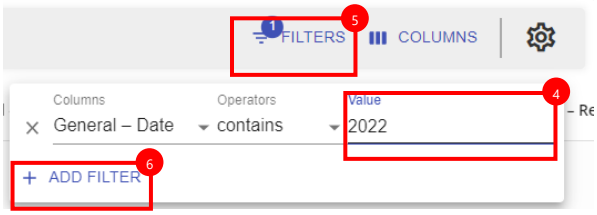

2. Select the column you want to filter:




3. Then the operator:




4. And finally, the value to search for:




5. The badge indicating the number of filters is refreshed as shown above

6. To add another filter, click on + ADD FILTER button and follow the same steps:
7. And then specify the operator linking the new filter to the previous one:

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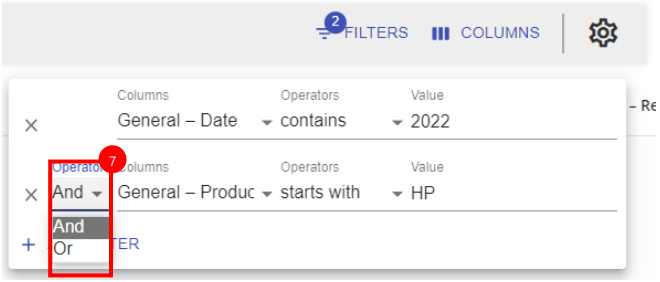
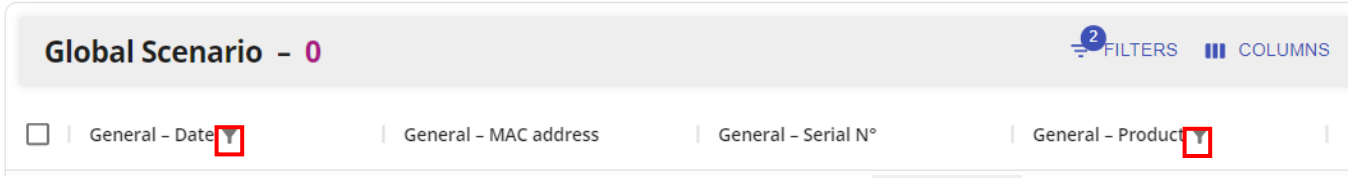
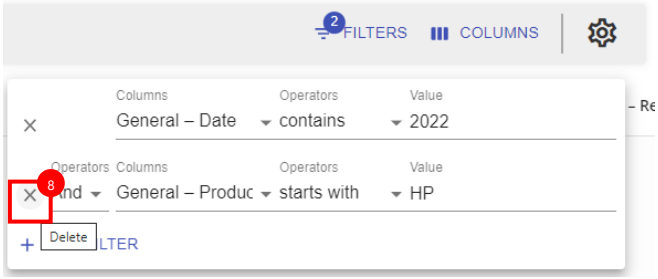



You will notice that the columns for which you created a filter (General – Date and General – Product in our example) will have a dedicated icon :




If you click on this icon, it will open the Filters pop-up as when go though FILTERS.

8. To delete any filter, just click on the cross in front of it:

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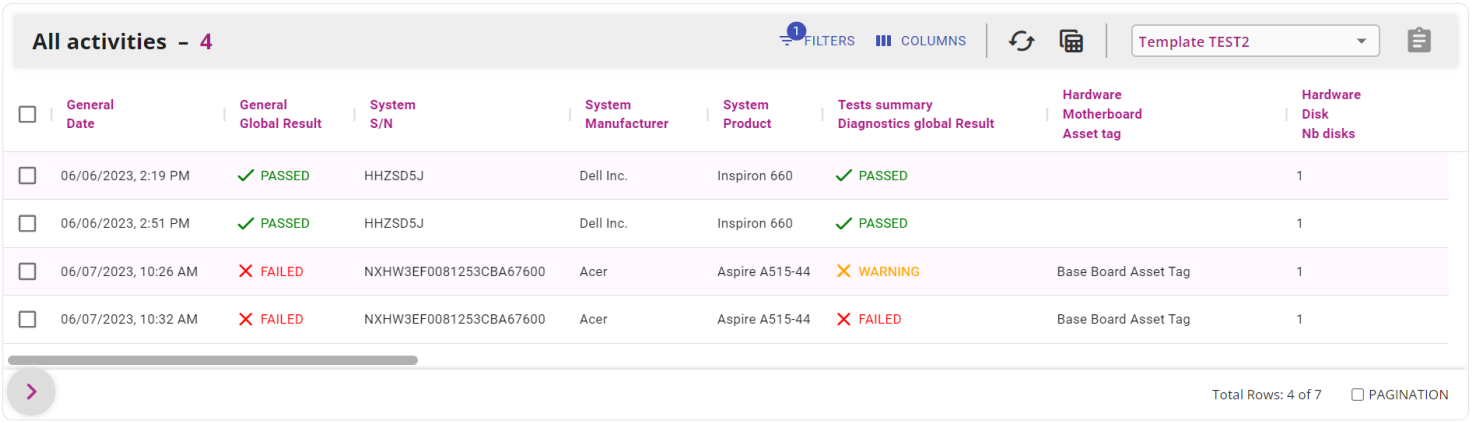
### Excel Export

The Excel Export button allows you to export into an Excel spreadsheet all the data that matches your current filters. You can choose in your user settings if you prefer exporting the RAW data as they are stored in the SQL Database, or the data interpreted as they are displayed.

Here an example of both exports with data interpreted or not based on the data shown below:



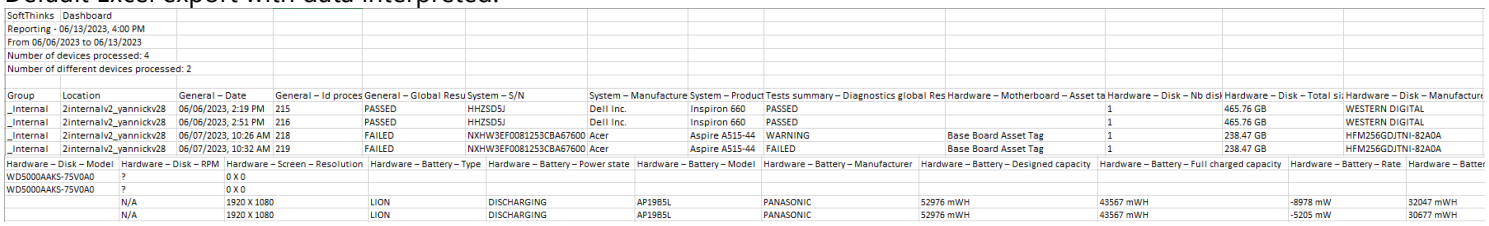
All activities – 4

FILTERS COLUMNS Template TEST2

| General Date | General Global Result | System S/N | System Manufacturer | System Product | Tests summary Diagnostics global Result | Hardware Motherboard Asset tag | Hardware Disk Nb disks |
|---|---|---|---|---|---|---|---|
| 06/06/2023, 2:19 PM | PASSED | HHZSD5J | Dell Inc. | Inspiron 660 | PASSED | | 1 |
| 06/06/2023, 2:51 PM | PASSED | HHZSD5J | Dell Inc. | Inspiron 660 | PASSED | | 1 |
| 06/07/2023, 10:26 AM | FAILED | NXHW3EF0081253CBA67600 | Acer | Aspire A515-44 | WARNING | Base Board Asset Tag | 1 |
| 06/07/2023, 10:32 AM | FAILED | NXHW3EF0081253CBA67600 | Acer | Aspire A515-44 | FAILED | Base Board Asset Tag | 1 |

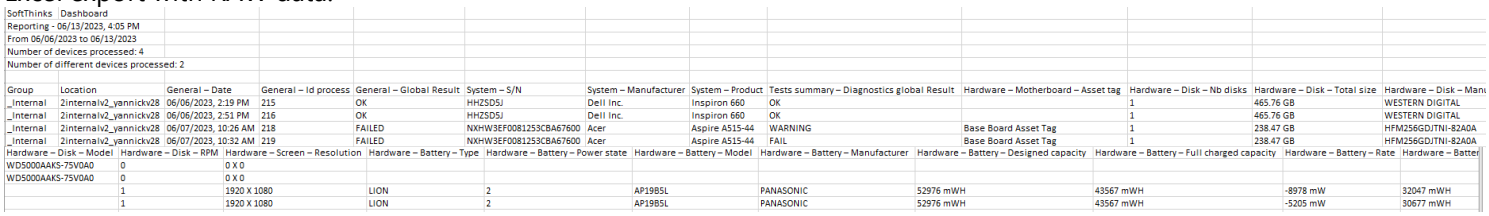
Total Rows: 4 of 7 PAGINATION

Default Excel export with data interpreted:



| SoftThinks | Dashboard | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reporting - 06/13/2023, 4:00 PM | | | | | | | | | | | | | |
| From 06/06/2023 to 06/13/2023 | | | | | | | | | | | | | |
| Number of devices processed: 4 | | | | | | | | | | | | | |
| Number of different devices processed: 2 | | | | | | | | | | | | | |
| Group | Location | General – Date | General – Id proces | General – Global Resu | System – S/N | System – Manufacture | System – Product | Tests summary – Diagnostics global Res | Hardware – Motherboard – Asset ta | Hardware – Disk – Nb disk | Hardware – Disk – Total si | Hardware – Disk – Manufacture | |
| _Internal | 2internalv2_yannickv28 | 06/06/2023, 2:19 PM | 215 | PASSED | HHZSD5J | Dell Inc. | Inspiron 660 | PASSED | | 1 | 465.76 GB | WESTERN DIGITAL | |
| _Internal | 2internalv2_yannickv28 | 06/06/2023, 2:51 PM | 216 | PASSED | HHZSD5J | Dell Inc. | Inspiron 660 | PASSED | | 1 | 465.76 GB | WESTERN DIGITAL | |
| _Internal | 2internalv2_yannickv28 | 06/07/2023, 10:26 AM | 218 | FAILED | NXHW3EF0081253CBA67600 | Acer | Aspire A515-44 | WARNING | Base Board Asset Tag | 1 | 238.47 GB | HFM256GDJTNI-82A0A | |
| _Internal | 2internalv2_yannickv28 | 06/07/2023, 10:32 AM | 219 | FAILED | NXHW3EF0081253CBA67600 | Acer | Aspire A515-44 | FAILED | Base Board Asset Tag | 1 | 238.47 GB | HFM256GDJTNI-82A0A | |
| Hardware – Disk – Model | Hardware – Disk – RPM | Hardware – Screen – Resolution | Hardware – Battery – Type | Hardware – Battery – Power state | Hardware – Battery – Model | Hardware – Battery – Manufacturer | Hardware – Battery – Designed capacity | Hardware – Battery – Full charged capacity | Hardware – Battery – Rate | Hardware – Batter | | | |
| WD5000AAKS-75V0A0 | ? | 0 X 0 | | | | | | | | | | | |
| WD5000AAKS-75V0A0 | ? | 0 X 0 | | | | | | | | | | | |
| | N/A | 1920 X 1080 | LION | DISCHARGING | AP19B5L | PANASONIC | 52976 mWH | 43567 mWH | -8978 mW | 32047 mWH | | | |
| | N/A | 1920 X 1080 | LION | DISCHARGING | AP19B5L | PANASONIC | 52976 mWH | 43567 mWH | -5205 mW | 30677 mWH | | | |

Excel export with RAW data:



| SoftThinks | Dashboard | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reporting - 06/13/2023, 4:05 PM | | | | | | | | | | | | | |
| From 06/06/2023 to 06/13/2023 | | | | | | | | | | | | | |
| Number of devices processed: 4 | | | | | | | | | | | | | |
| Number of different devices processed: 2 | | | | | | | | | | | | | |
| Group | Location | General – Date | General – Id process | General – Global Result | System – S/N | System – Manufacturer | System – Product | Tests summary – Diagnostics global Result | Hardware – Motherboard – Asset tag | Hardware – Disk – Nb disks | Hardware – Disk – Total size | Hardware – Disk – Manu | |
| _Internal | 2internalv2_yannickv28 | 06/06/2023, 2:19 PM | 215 | OK | HHZSD5J | Dell Inc. | Inspiron 660 | OK | | 1 | 465.76 GB | WESTERN DIGITAL | |
| _Internal | 2internalv2_yannickv28 | 06/06/2023, 2:51 PM | 216 | OK | HHZSD5J | Dell Inc. | Inspiron 660 | OK | | 1 | 465.76 GB | WESTERN DIGITAL | |
| _Internal | 2internalv2_yannickv28 | 06/07/2023, 10:26 AM | 218 | FAILED | NXHW3EF0081253CBA67600 | Acer | Aspire A515-44 | WARNING | Base Board Asset Tag | 1 | 238.47 GB | HFM256GDJTNI-82A0A | |
| _Internal | 2internalv2_yannickv28 | 06/07/2023, 10:32 AM | 219 | FAILED | NXHW3EF0081253CBA67600 | Acer | Aspire A515-44 | FAIL | Base Board Asset Tag | 1 | 238.47 GB | HFM256GDJTNI-82A0A | |
| Hardware – Disk – Model | Hardware – Disk – RPM | Hardware – Screen – Resolution | Hardware – Battery – Type | Hardware – Battery – Power state | Hardware – Battery – Model | Hardware – Battery – Manufacturer | Hardware – Battery – Designed capacity | Hardware – Battery – Full charged capacity | Hardware – Battery – Rate | Hardware – Batter | | | |
| WD5000AAKS-75V0A0 | 0 | 0 X 0 | | | | | | | | | | | |
| WD5000AAKS-75V0A0 | 0 | 0 X 0 | | | | | | | | | | | |
| | 1 | 1920 X 1080 | LION | 2 | AP19B5L | PANASONIC | 52976 mWH | 43567 mWH | -8978 mW | 32047 mWH | | | |
| | 1 | 1920 X 1080 | LION | 2 | AP19B5L | PANASONIC | 52976 mWH | 43567 mWH | -5205 mW | 30677 mWH | | | |

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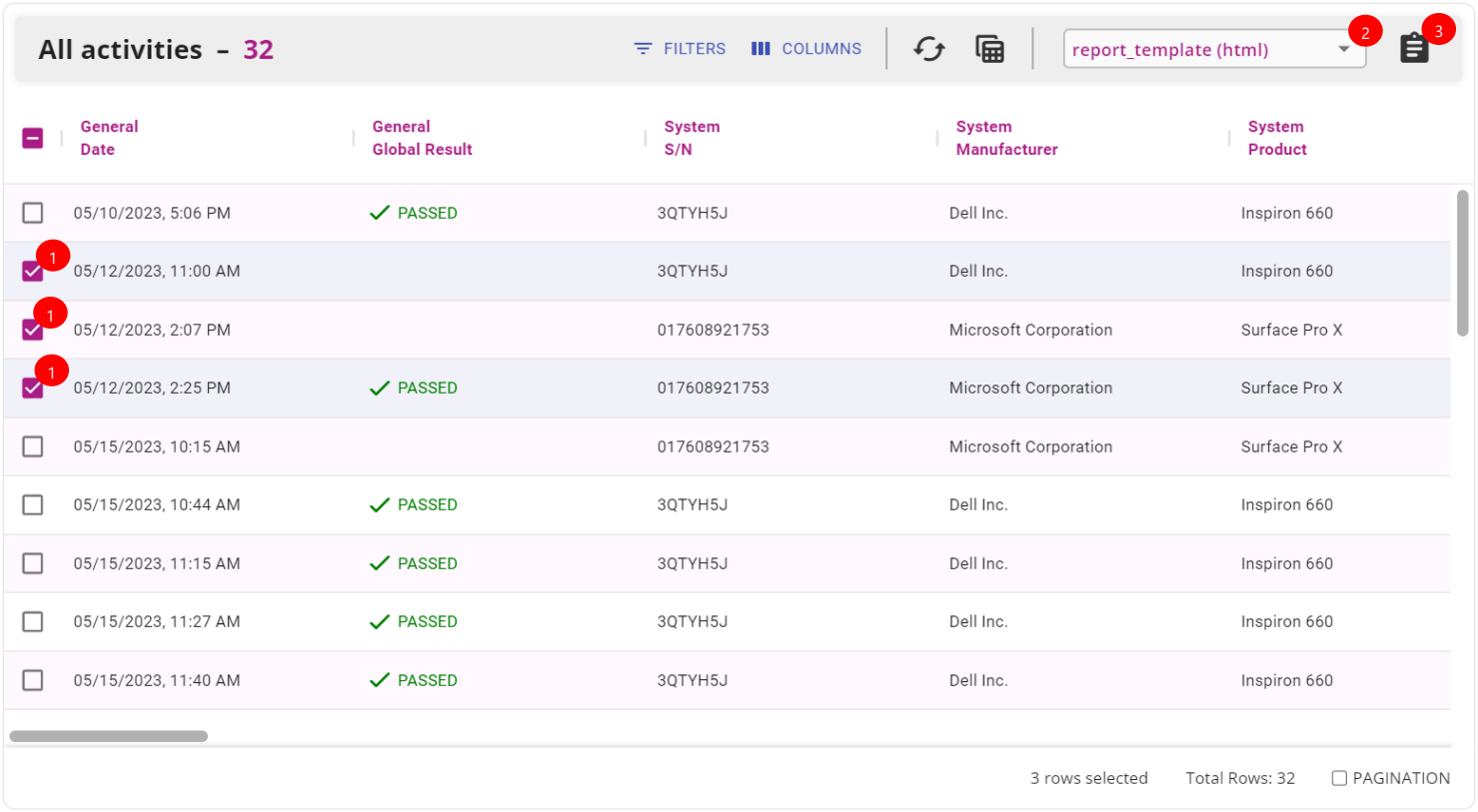
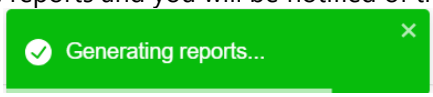
Reports

The Dashboard allows you to generate the same reports than at the end of any SDS process on site, or manually through ReportGenerator tool.




1. Select the processes for which you want to generate reports by checking the check box in front of them
2. Select the type of report in the dedicated dropdown list
3. Click on icon to generate the reports and you will be notified of the progress of this task:




If you want to customize, edit or add new reports, please refer to Reports administration.

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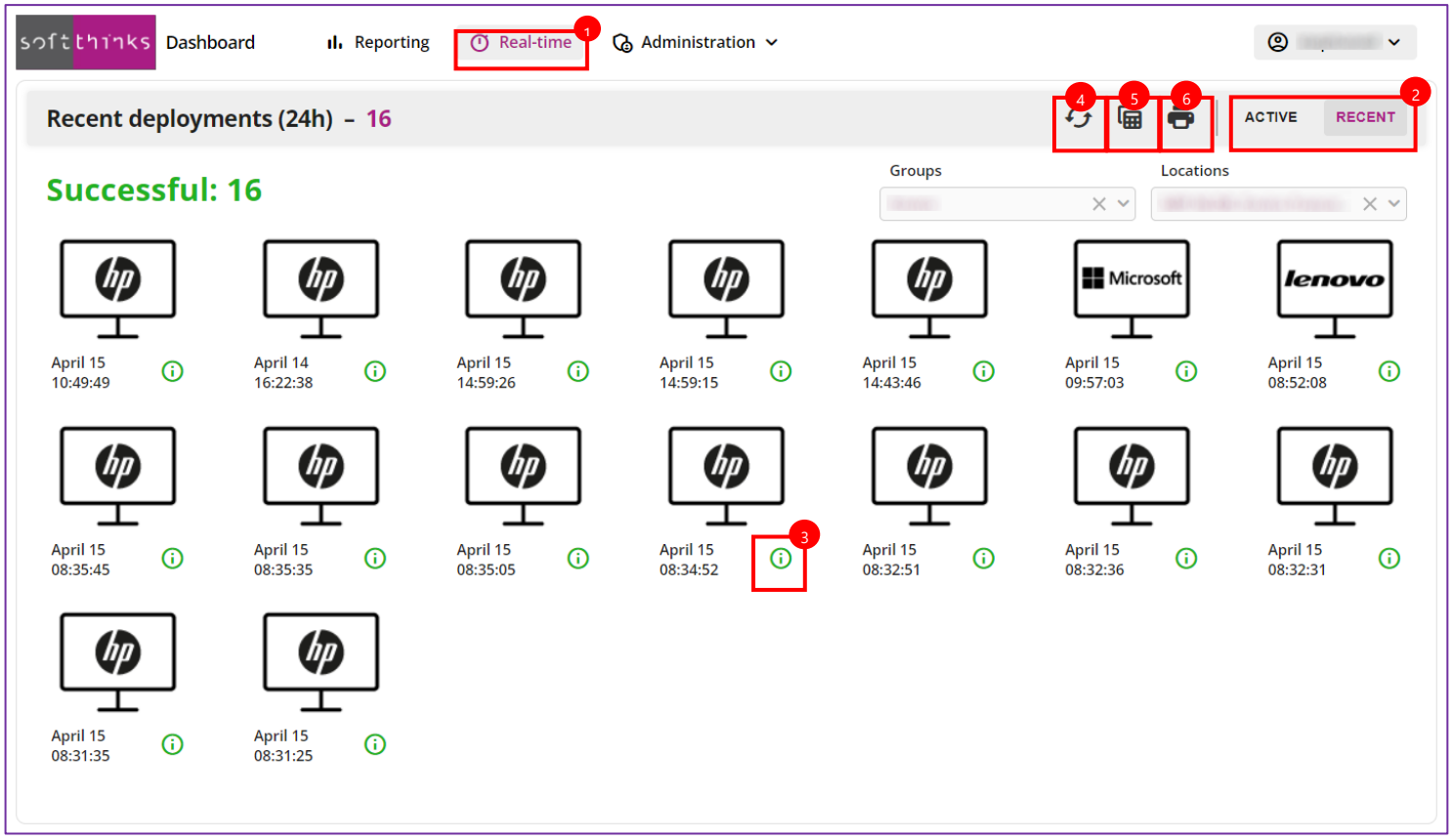
# Real Time view

Click on “Real Time” 1 in the toolbar to view the activity on your site(s).
By default, you will see the activity in real time (“Active)” but you can switch to “Recent” in order to see the during the last 24 hours activities 2 :




Successful and failed process are grouped (in the example above we have 16 successful ones and none failed).

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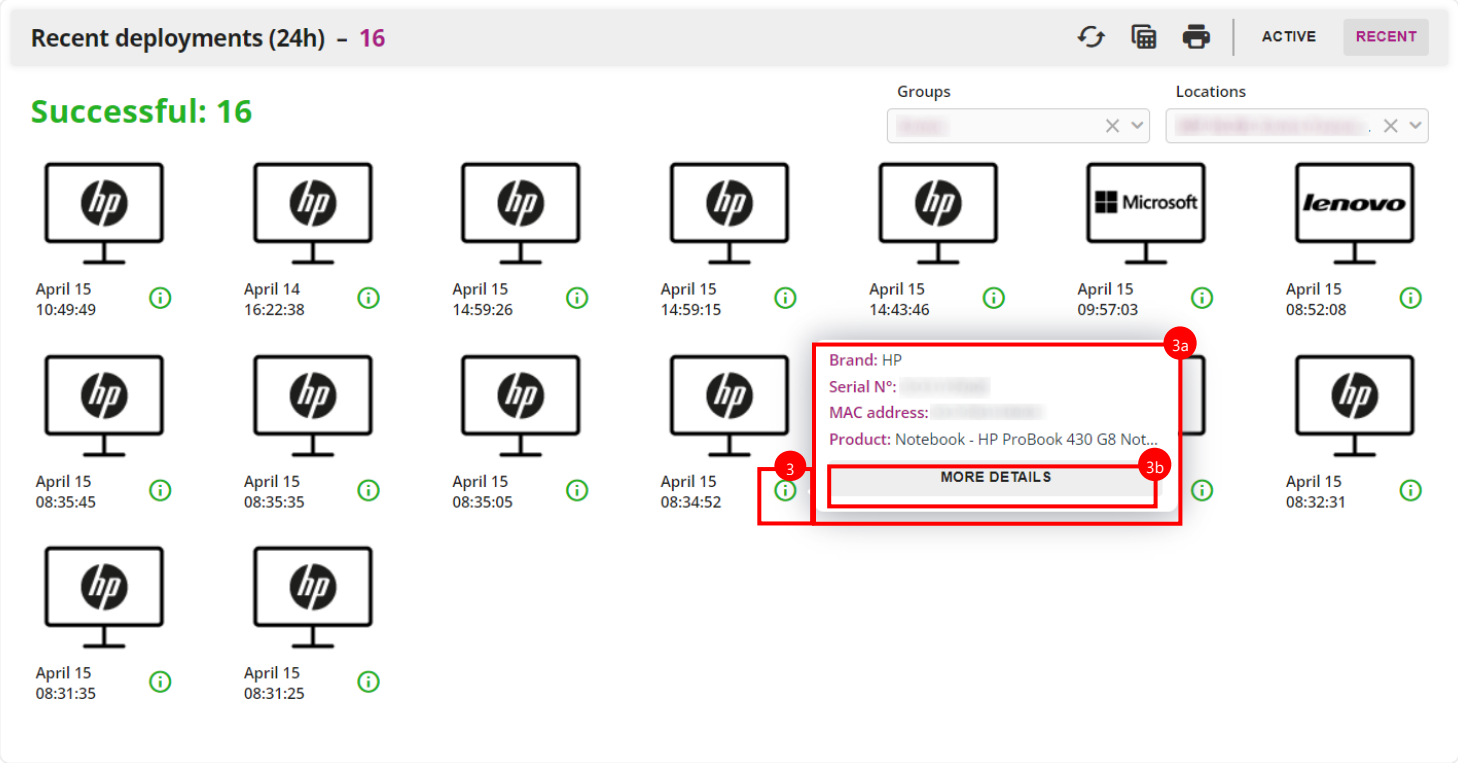
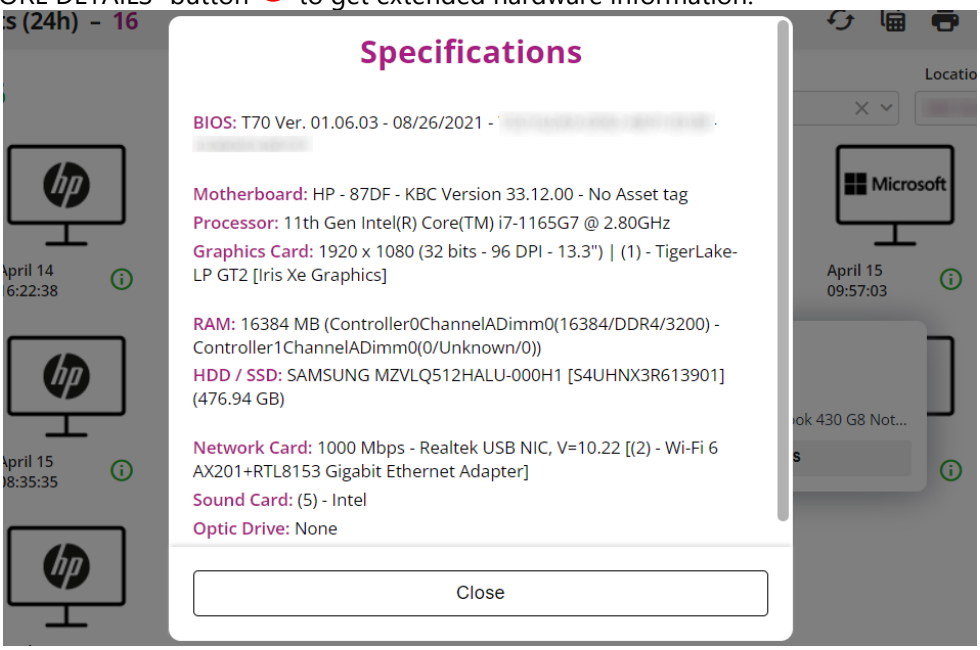
Move your mouse over the ⓘ icon to get a quick summary 3:




and click then on "MORE DETAILS" button 3b to get extended hardware information:

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You can click on the button 4 to refresh the view.

Click on the icon 5 to generate an Excel spreadsheet (named sds_dashboard_realtime_recent_YYYYMMDD-HHMMSS.xlsx) with all the devices listed in the view:

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | SoftThinks | Dashboard | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | Locations: | XXXXXXXXX | | | |
| 5 | View: | Recent deployments (last 24h) | | | |
| 6 | Successful deployments: | 16 | | | |
| 7 | Failed deployments: | 0 | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | Date | | Brand | Model | Serial N° |
| 12 | 15/04/2001 | | HP | Notebook - HP ProBook 450 G8 Notebook PC | XXXXXXXXXX |
| 13 | 14/04/2001 | | HP | Notebook - HP ProBook 640 G8 Notebook PC | XXXXXXXXXX |
| 14 | 15/04/2001 | | HP | Notebook - HP ProBook 650 G8 Notebook PC | XXXXXXXXXX |
| 15 | 15/04/2001 | | HP | Notebook - HP ProBook 650 G8 Notebook PC | XXXXXXXXXX |
| 16 | 15/04/2001 | | HP | Notebook - HP EliteBook 840 G8 Notebook PC | XXXXXXXXXX |
| 17 | 15/04/2001 | | Microsoft | LapTop - Surface Laptop 4 | XXXXXXXXXX |
| 18 | 15/04/2001 | | Lenovo | Notebook - 20XLS1VR00 | XXXXXXXXXX |
| 19 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 20 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 21 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 22 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 23 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 24 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 25 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 26 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |
| 27 | 15/04/2001 | | HP | Notebook - HP ProBook 430 G8 Notebook PC | XXXXXXXXXX |

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You can also directly print the real time report, or export it to PDF, by clicking on the icon 6:

16/04/2022 00:23 Real-time deployments

# Dashboard

Locations:
View: Recent deployments (last 24h)
Successful deployments: 16
Failed deployments: 0

| Date | Brand | Model | Serial N° | Failure date | Failure details |
|---|---|---|---|---|---|
| April 15, 10:49:49 | HP | Notebook - HP ProBook 450 G8 Notebook PC | | | |
| April 14, 16:22:38 | HP | Notebook - HP ProBook 640 G8 Notebook PC | | | |
| April 15, 14:59:26 | HP | Notebook - HP ProBook 650 G8 Notebook PC | | | |
| April 15, 14:59:15 | HP | Notebook - HP ProBook 650 G8 Notebook PC | | | |
| April 15, 14:43:46 | HP | Notebook - HP EliteBook 840 G8 Notebook PC | | | |
| April 15, 09:57:03 | Microsoft | LapTop - Surface Laptop 4 | | | |
| April 15, 08:52:08 | Lenovo | Notebook - 20XLS1VR00 | | | |
| April 15, 08:35:45 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:35:35 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:35:05 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:34:52 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:32:51 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:32:36 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:32:31 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:31:35 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |
| April 15, 08:31:25 | HP | Notebook - HP ProBook 430 G8 Notebook PC | | | |

195.154.172.237:8084/realtime 1/2

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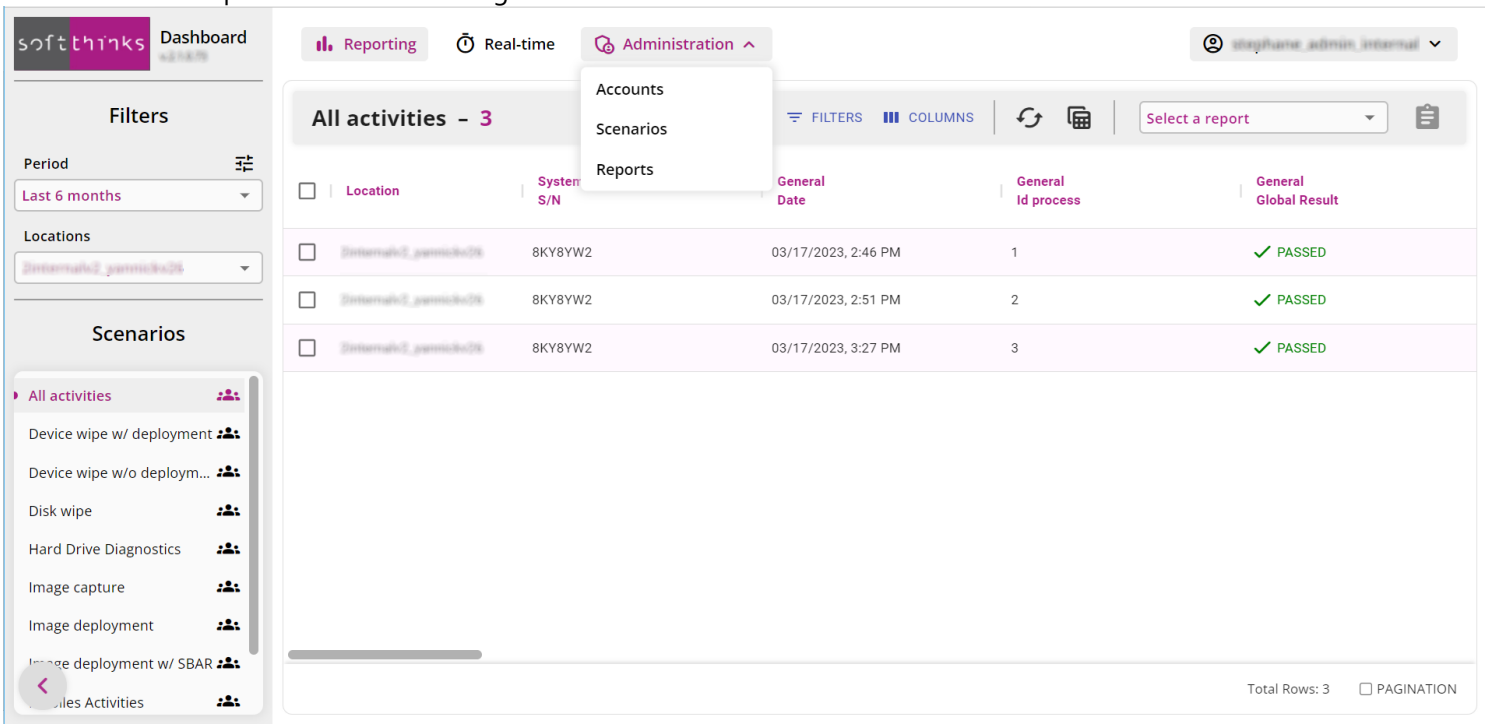
# Administration

When you click on Administration menu in the navigation bar on the top, you have access to different Dashboard elements that you can manage, depending on your account type. In the example below, as a group administrator, you can manage your group's accounts, scenarios and reports, whereas a user will only see Scenarios and Reports, and Softthinks administrators will have also the Groups and Locations management.

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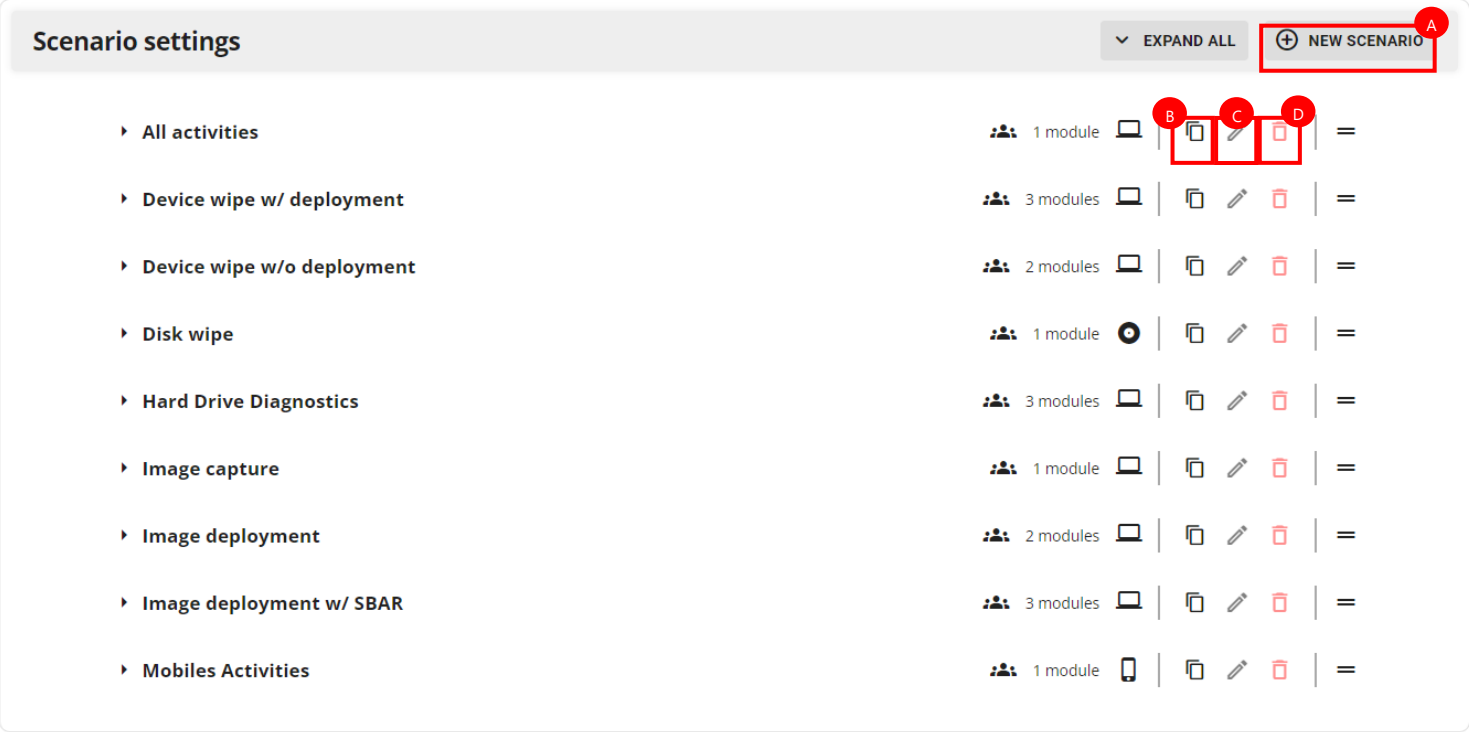
## Scenarios (administrators only)

The scenarios are predefined workflows defined by Softthinks based on your use cases and needs.
When you select Administration > Scenarios, you see all the scenarios which are available for you, meaning the predefined scenarios created and shared by the Dashboard Administrator, the ones you might have created, or that other users might have created and shared with you:




You can directly see if a scenario is shared (), how many modules are part of the conditions, and if the scenario is relative to a PC (), whatever it's a desktop, a laptop, a server..., or to a disk ( ) or to an iOS or Android device ( ).
The symbol = allows you to reorder the scenarios in order to put the ones you are using regularly on top.
You can expand any scenario to see its details, as the sharing setting and the modules' conditions:

*With the scenario above, we will obtain all the processes where we wiped disks (module SDS Shredder with "closing_code" present) but without deploying an image (module SDS Restore absent). To get only the successful wipes, we would change the condition on "closing_code" to match the success value instead of just its existence.*

If you want to display all scenario details, you can just click on EXPAND ALL button in the upper right.

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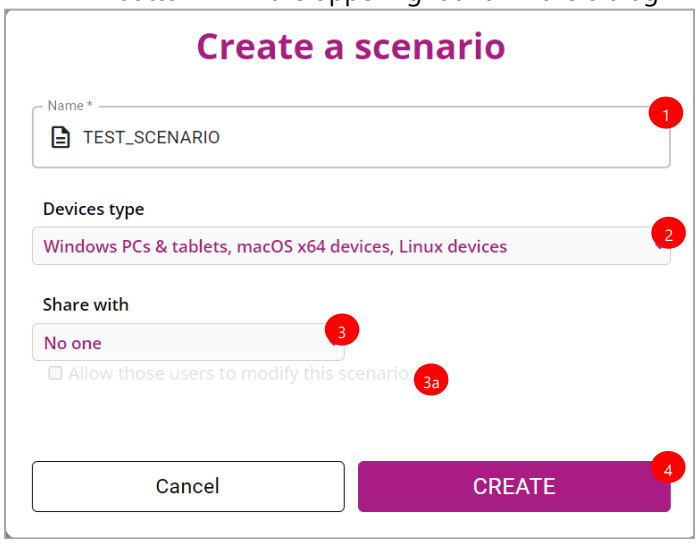
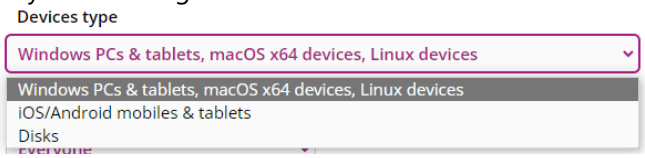
### Creating a new scenario

To create a new report, click on NEW SCENARIO button A in the upper right and fill the dialog which appears:




1 Enter a name for your new scenario.

2 Choose the devices type for which you want to generate this scenario:

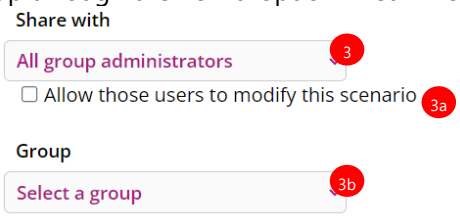



- Windows PCs & tablets, macOS x64devices, Linux devices: this is the most common devices type and it includes
  - Windows devices (x86/x64 & ARM64): desktops, laptops, servers, barebones, All-In-One, Windows tablets…
  - macOS devices: MacBook air, MacBook pro, Mac mini, iMac (with or without T2 security chip), except the Apple Silicon devices (with M1, M2 chips)
  - Linux devices: desktops, laptops…
- iOS/Android mobiles & tablets
- Disks

3 Decide with who you want to share eventually your scenario. By default, the new scenarios will be visible only by you but you can decide to share them with other group administrators, or all your group users through the “Share with” field.

3a If you decided to share your new scenario, you can “Allow those users to modify this scenario”

3b As a Softthinks administrator, if you decided to share your scenario with “All group administrators” or “All group users”, you will be asked to select the group through the new dropdown list which appeared dynamically:

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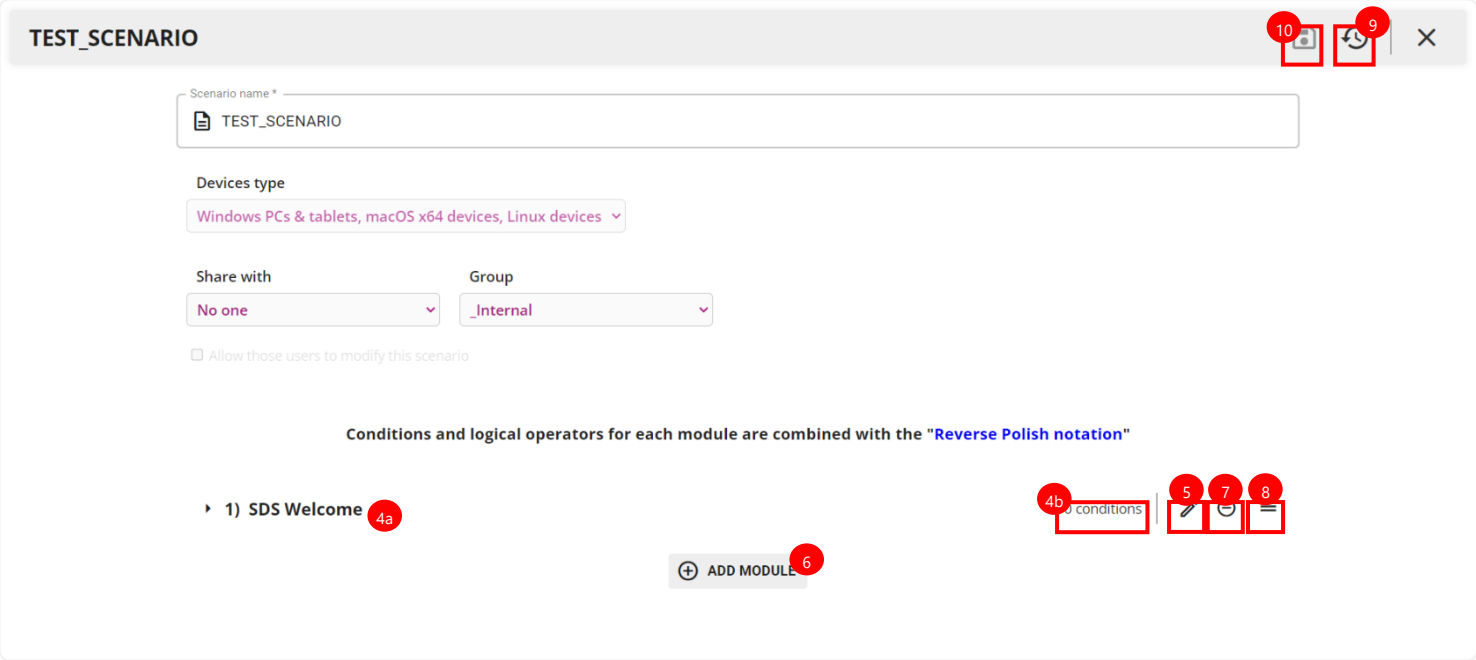
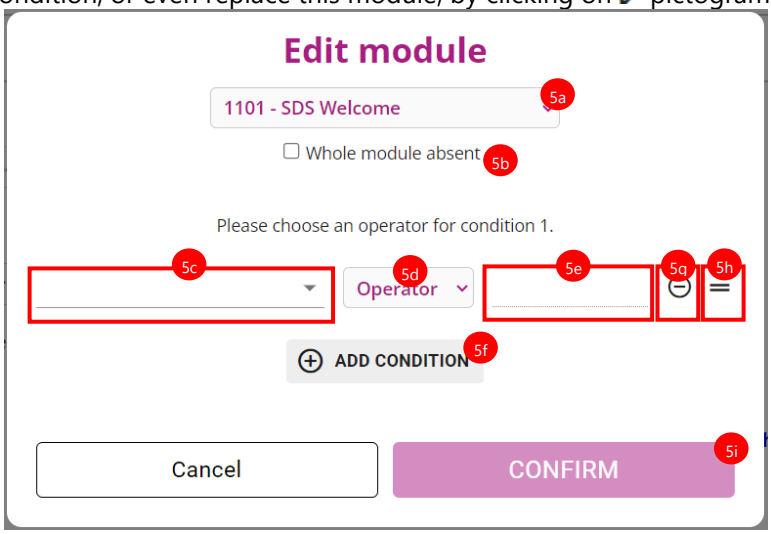
4 Click on “Create” button and then you define the flow:




By default, the scenario contains the SDS Welcome module 4a which is usually used when booting the device into SDS environment and you can notice that there is no condition 4b for the moment.

5 Edit this module to add a condition, or even replace this module, by clicking on pictogram:

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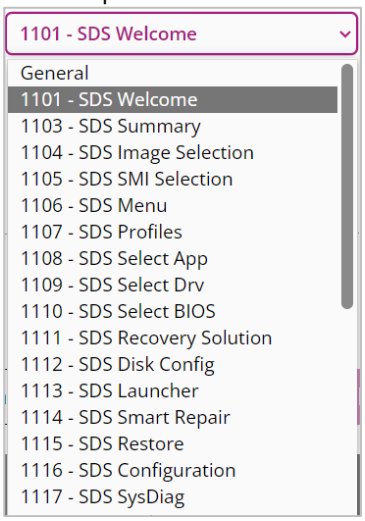
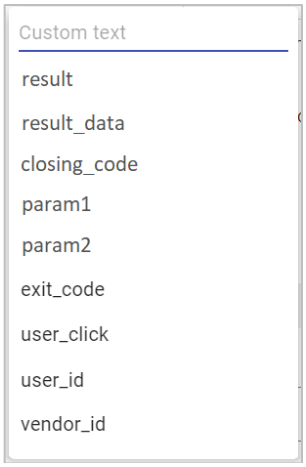
5a Here you can change the module though the dropdown list:




5b If you want to exclude the module selected from the flow, just click on the "Whole module absent" checkbox. This is useful, for example, if you to distinguish wipe flows without deployments (in this case you will add the module "SDSRestore" and check this "Whole module absent" option) from wipe flows with deployment.

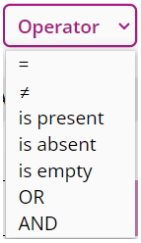
5c Once the module selected, you can now define a condition based on a value relative to this module. You have first to select this value through the left dropdown list. Its contents are dependent on the module selected and will be refreshed when you change the module:




The first 5 items are common to all modules

then you have items specific to each module (as "exit_code" and "user_click" here),
and finally, for some modules as SDSWelcome here, you might have dynamic items set through configuration file ("user_id" and "vendor_id" are fields added though SDSWelcome.ini)

5d Then, you select the operator (except OR and AND that we will detail later in 5f):




5e And the value to match (depending on the operator you chose) in the free text field on the right

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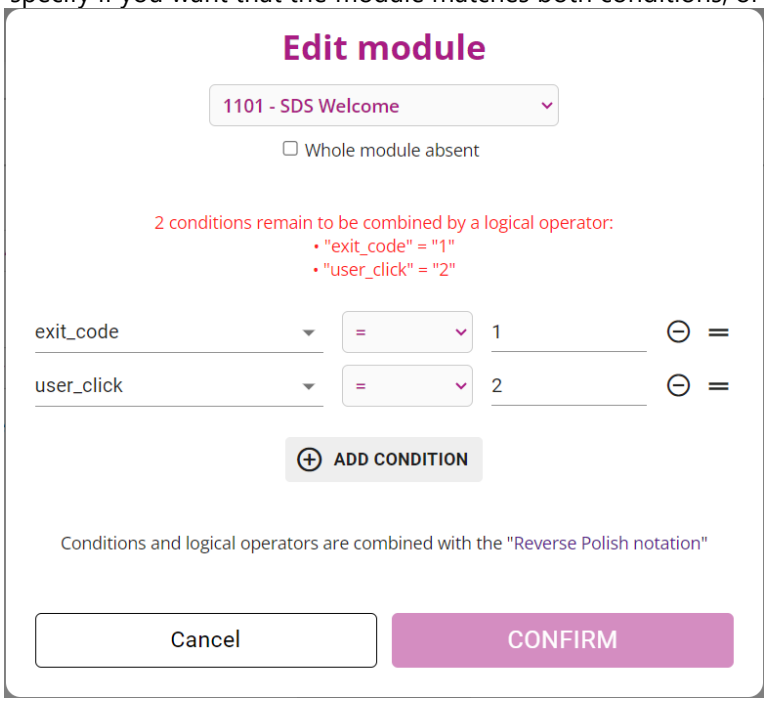
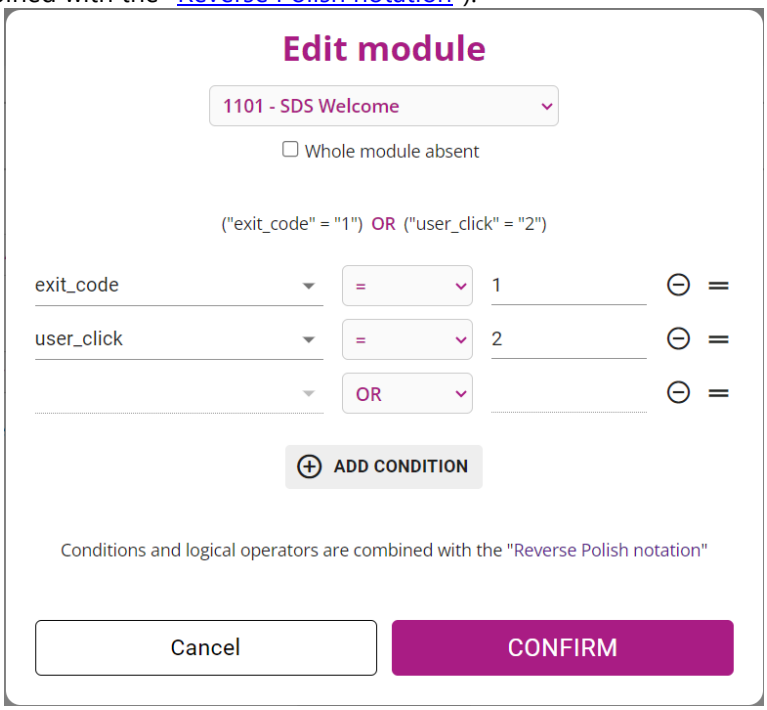
5f You can add other conditions by clicking on the ⊕ ADD CONDITION button and, once you will have defined another condition, you will need to specify if you want that the module matches both conditions, or one or the other:




To do so, click again on ⊕ ADD CONDITION and just select AND or OR in operator dropdown list as below (conditions and logical operators are combined with the "Reverse Polish notation"):




5g The pictogram ⊖ allow you to delete any condition whereas the pictogram = allows you to reorder them.

5i Once you have defined all the conditions on the module, click on the CONFIRM button

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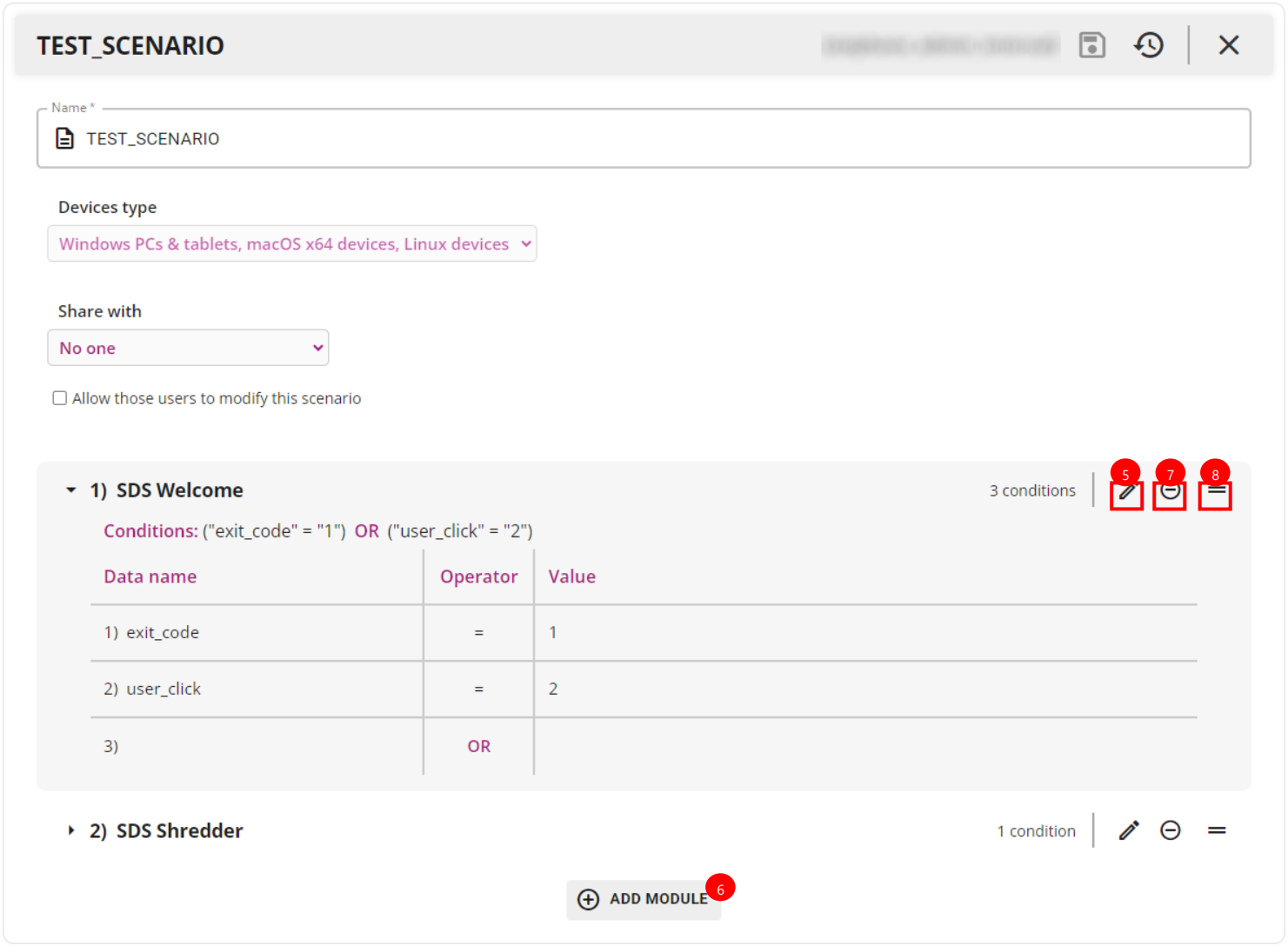
6 Now you can add another module by clicking on the ADD MODULE button and customize it as in previous step 5:




7 If you want to remove a module from your scenario, just click on the ⊖ pictogram on the right of this module.
8 You can also reorder the modules thanks to the pictogram =.
9 You can at any time click on the button on the upper right to reset all your changes
10 When your scenario is complete, just click on the button on the upper right

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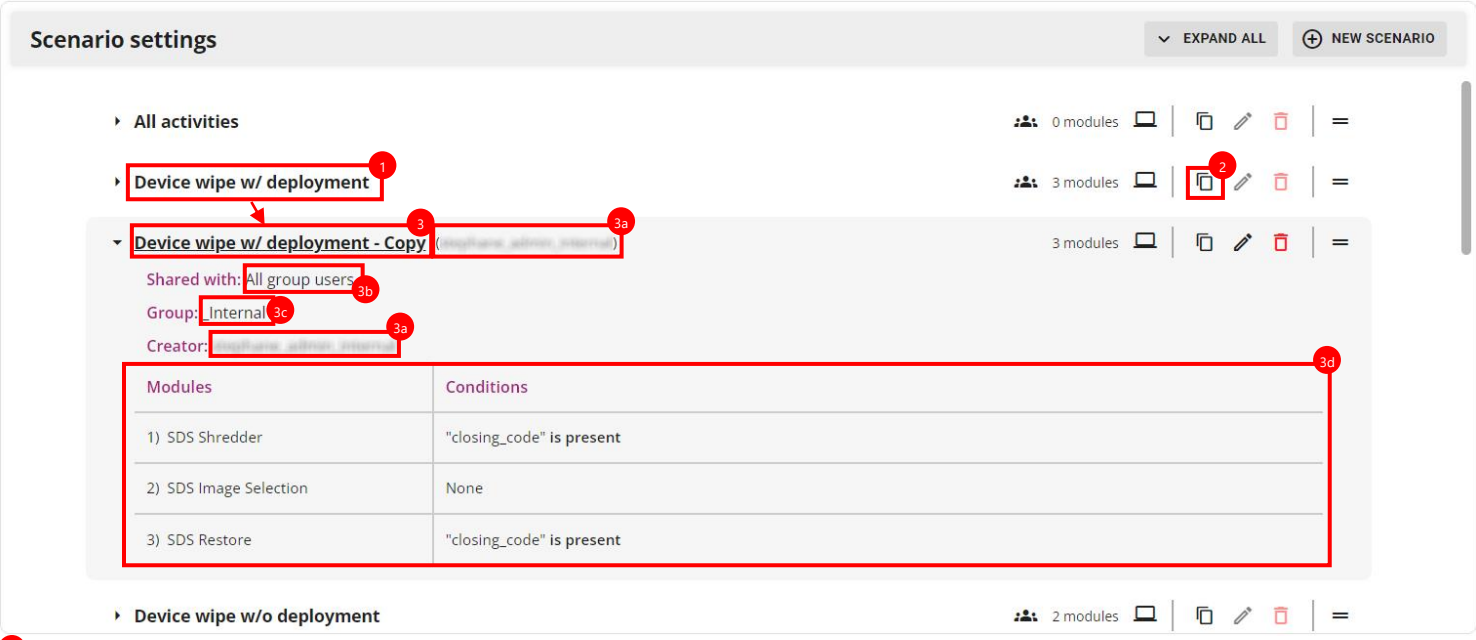
### Duplicating a scenario

Instead of creating a scenario from scratch, you have the possibility to duplicate an existing one and customize it.




1. Select the scenario you want to duplicate
2. Click on bouton
3. A new scenario will be added to the list with "- Copy" suffix in its name
   - 3a with you as creator
   - 3b shared with other users of the same level
   - 3c with your group
   - 3d and the same modules and conditions than the original scenario

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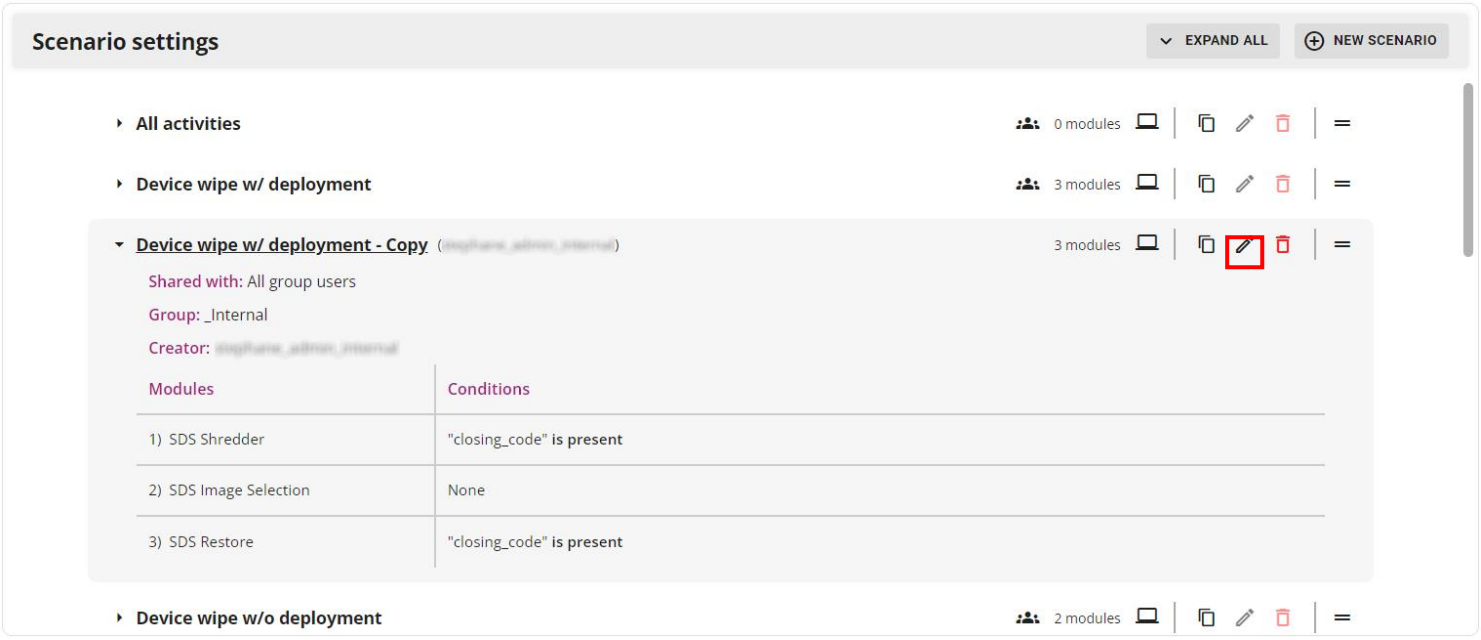
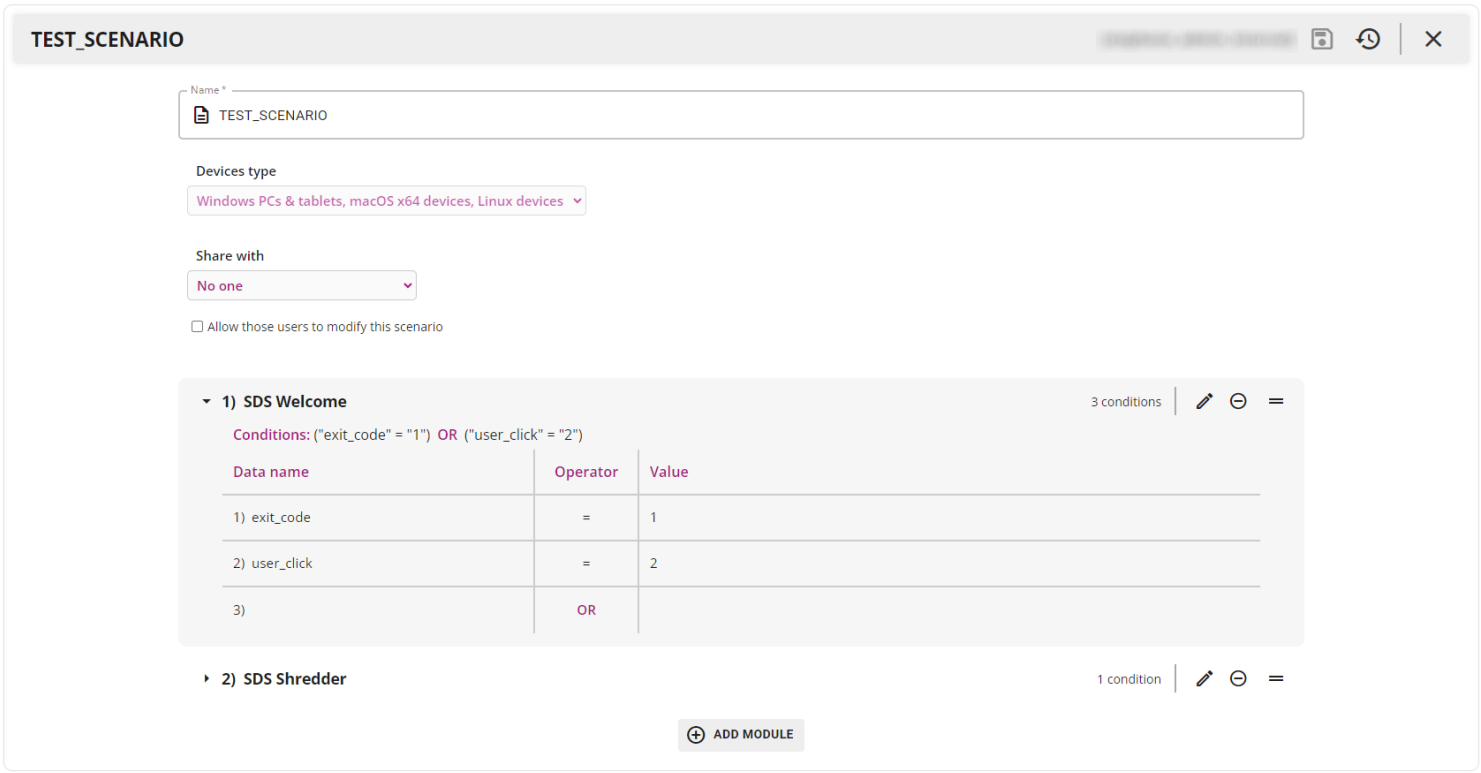
### Editing a scenario

To edit a scenario, click on the pictogram (you can only edit scenario that you created or shared with you):




Then you arrive to the same page that you reach when you create a scenario (see dedicated chapter for details):

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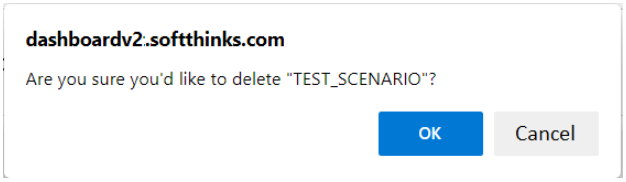
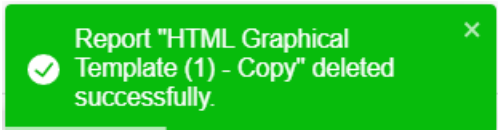
### Deleting a scenario

To delete a scenario, click on button and confirm the deletion of the scenario:




You will be notified once the scenario deleted:




NOTE: You can only delete a scenario that you created. Please contact the creator of the report if you absolutely need to delete it.

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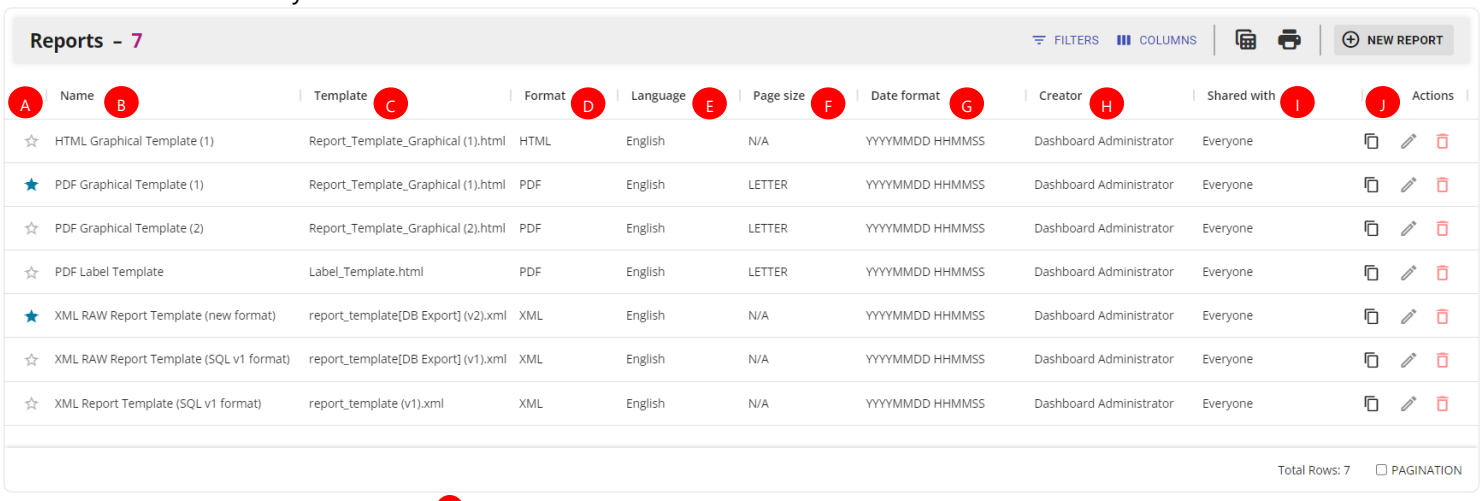
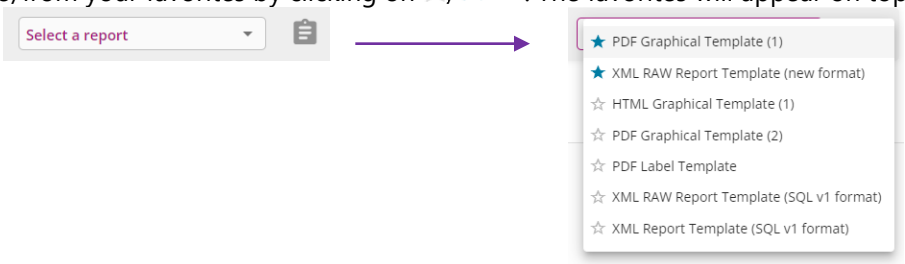
## Reports (administrators only)

When you select Administration > Reports, you see all the reports which are available for you, meaning the predefined reports created and shared by the Dashboard Administrator, the ones you might have created, or that other users might have created and shared with you:




Each report is identified by a 'Name' B which appears in the Reports dropdown list in the main reporting view and you add/remove it to/from your favorites by clicking on ☆/★ A. The favorites will appear on top of this Reports dropdown list:




The 'Name' column B contains the reports' name as they appear in the Reports dropdown list.
The 'Template' column C indicates the template use to generate the report. This template has to be text file based as HTML, XML, CSV, TXT... By default, the format D of the output file will be the same than the template, expect for PDF reports which are generated from HTML templates. For those PDF reports, you can see their page size E.
Each report can be generated in any language F supported (the RAW data from SQL database are kept as they are, whereas the labels from the templates, as well as the data interpreted are localized). In the same way, the date format G can also be customized for each report.
The column 'Creator' H indicates who created the report, and the next column 'Shared with' I shows with who he decided to share this report. The last column J allows you to duplicate (⧉) a report (for example to customize a predefined one), and edit (✎) / delete (🗑) a report if you are its creator, or if its creator allowed you to do so.
As for all most of the views of the Dashboard, you can hide/show columns and reorder them to your convenience. You can also apply filters and export the list to an Excel spreadsheet.

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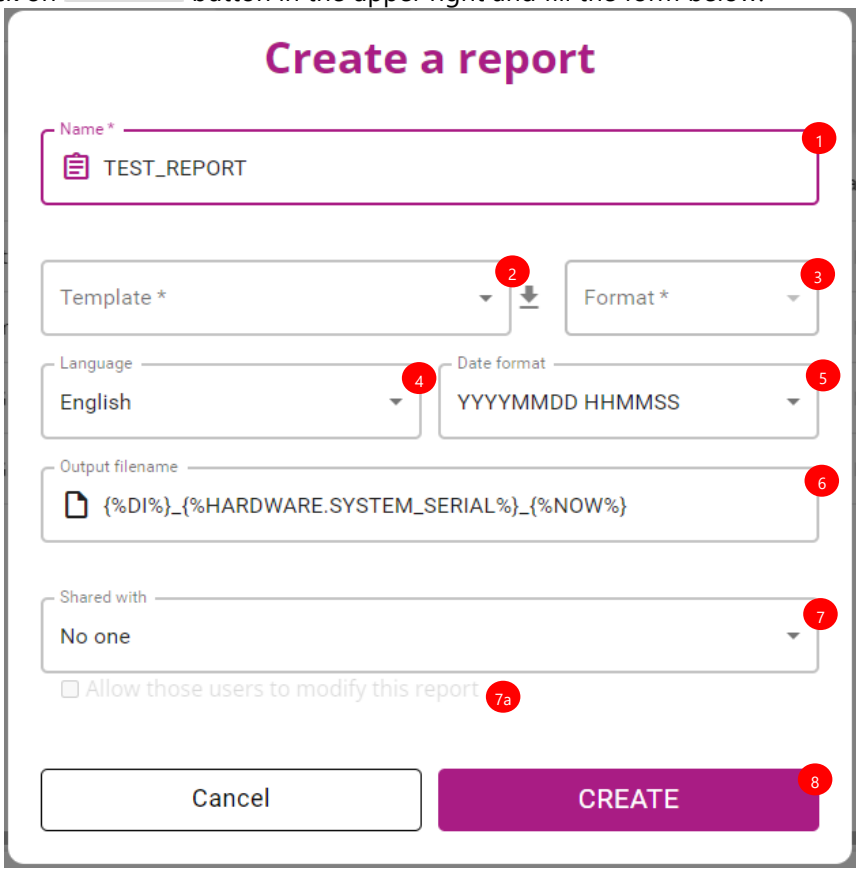
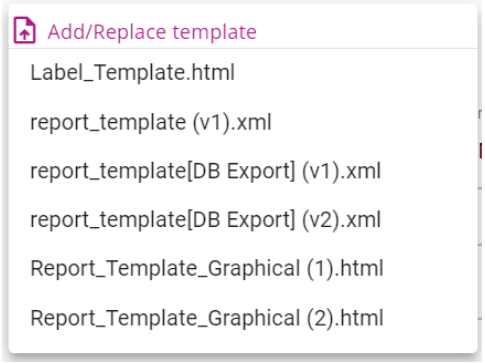
### Creating a new report

To create a new report, click on NEW REPORT button in the upper right and fill the form below:




1 You first need to enter a name for your new report.

2 Then, you choose the template you want to use by either selecting an existing one in the list, or adding a new one though "Add/Replace template" which opens a file selection dialog and will upload the local template file you will have selected:

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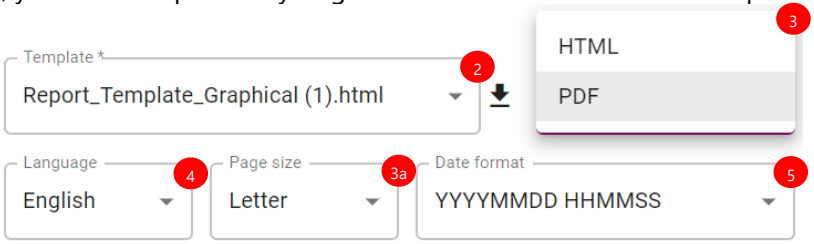
3 Once the Template field filled, the format field on its right will be updated accordingly based on the file extension of the template. For HTML template, you have the possibility to generate either a HTML or a PDF report:




3a If you select PDF format as above, a new "Page size" field appears select the PDF document's page size.

4 If you want to generate a report in another language than English, please set it in Language field.

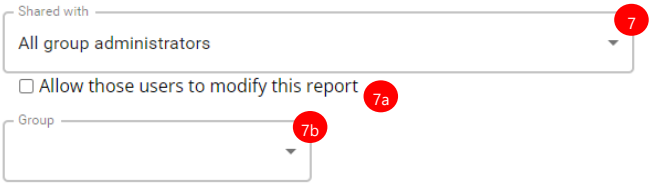
5 You can also change the date format if needed.

6 By default, the reports generated are named "<Location>_<DeploymentID>_<Date>_<Time>.<Format>". If you want another filename, just specify it in the "Output filename" field. You can use the predefined keywords and grammar used inside the reports' templates to insert any SDS SQL database value into this filename (see Reports templates keywords and grammar).

7 The new reports you create will be visible only by you by default but you can decide to share them with other group administrators, or all your group users through the "Share with" field.

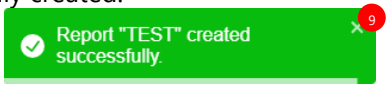
7a Just below, the option "Allow those users to modify this report", allows the other users with who you share your report to modify it.

7a As a Softthinks administrator, if you decided to share your report with "All group administrators" or "All group users", you will be asked to select the group through the new dropdown list which appeared dynamically:




8 Click on CREATE button to finalize the report creation

9 You are notified that the report is successfully created:

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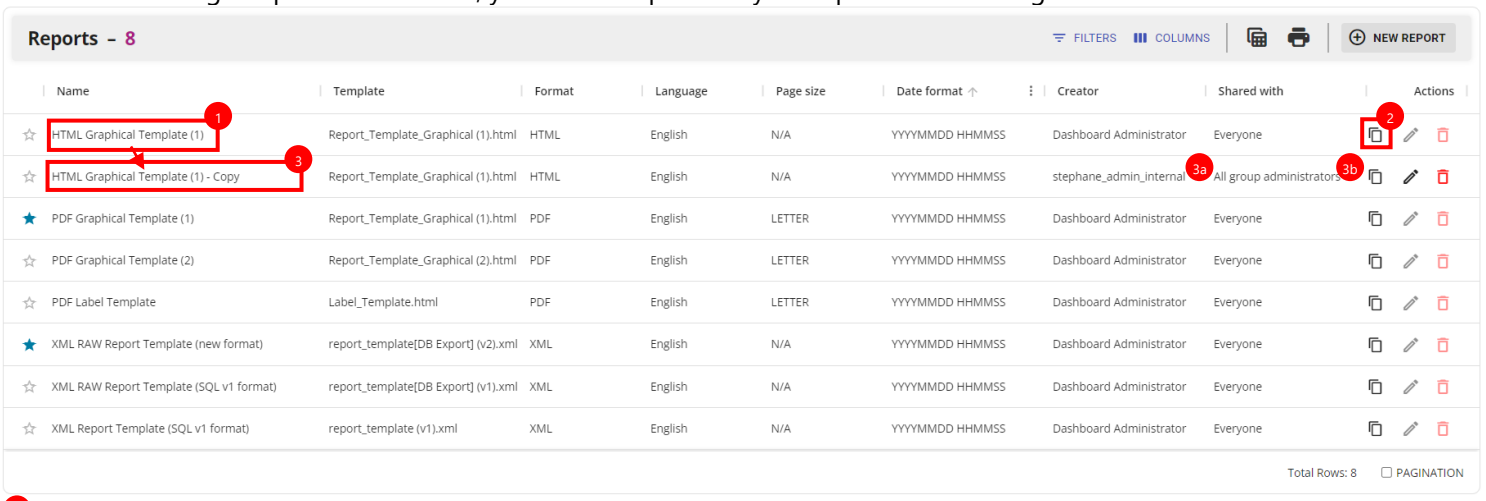
### Duplicating a report

Instead of creating a report from scratch, you have the possibility to duplicate an existing one and customize it.




1. Select the report you want to duplicate
2. Click on bouton
3. A new report will be added to the list with "- Copy" suffix in its name and the same settings, but
   - 3a with you as creator
   - 3b shared with other users of the same level

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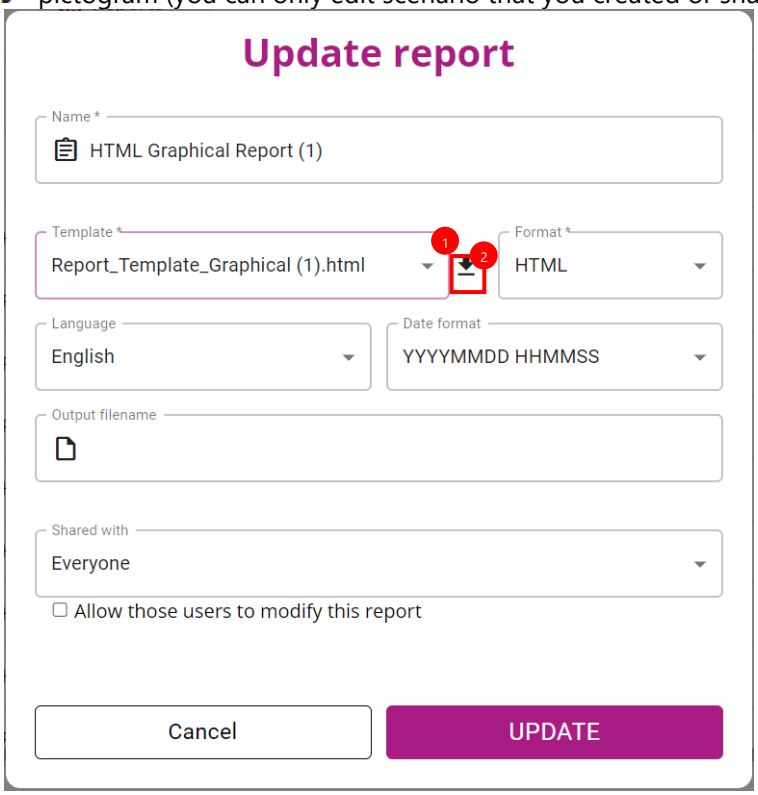
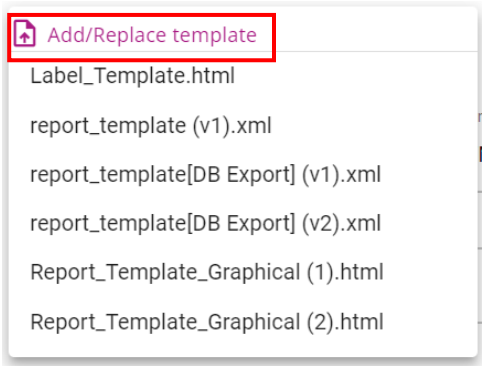
### Editing a report

To edit a scenario, click on the pictogram (you can only edit scenario that you created or shared with you):




If you want to edit an existing template,

1. select it in the "Template" dropdown list
2. click on the ⬇ button to download it
3. once you have modified the template, go back here and, click on "Template" field again and this time choose "Add/Replace template" and then select your local template file modified (you have to keep the same filename if you want to replace the existing one, else it will be added):




For the other settings, see Creating a new report.

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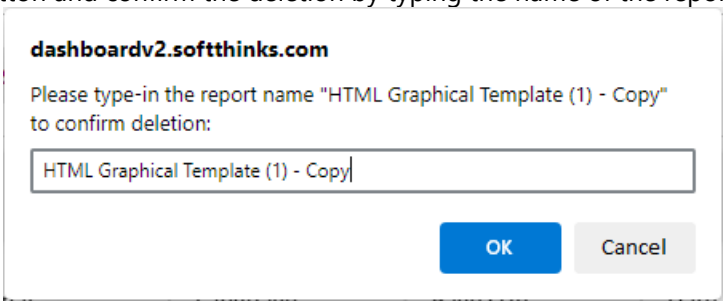
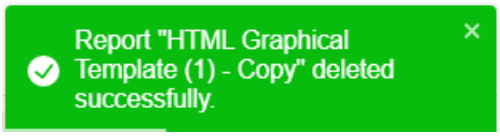
### Deleting a report

To delete a report, click on button and confirm the deletion by typing the name of the report:




You will be notified once the report deleted:




NOTE: You can only delete a report that you created. Please contact the creator of the report if you absolutely need to delete it.

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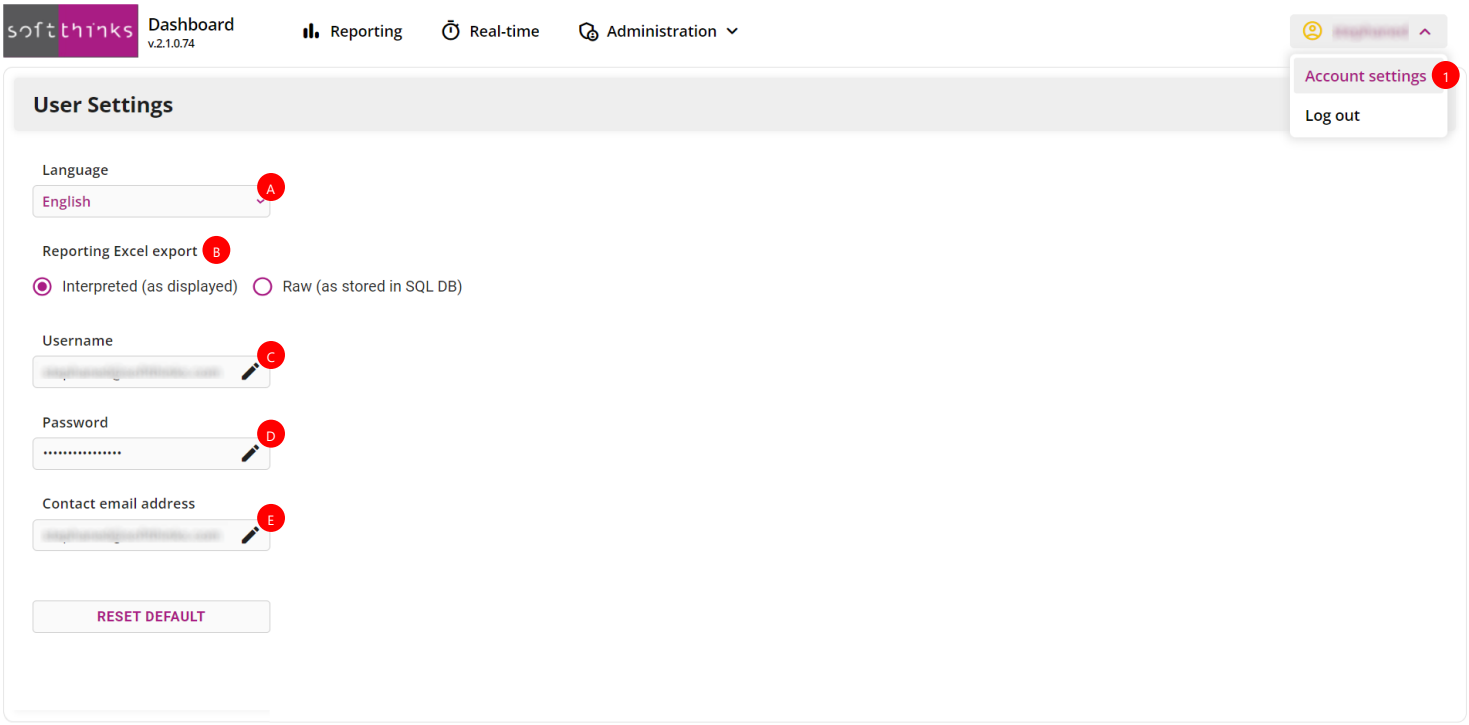
# User Settings

You can customize your settings when you click on your account name in the upper right and select “Account settings” 1:




Here you can select the language A of the Dashboard UI (it will not impact the language of the data, exports and reports), change your Username C and Password D, as well as your contact email address E which is required to reset your password in the case you would lose it.

For the Excel export feature B, you can also decide if you want the data interpreted as they are displayed (for example “Success/Failure/Skipped” instead of numeric values which can vary depending on the module launched), or the RAW data as they are stored in the SQL database.

The “RESET DEFAULT” button allows you to revert back all the settings to the default ones.

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# Troubleshoot guide

| Symptom | Potential root cause | Solution |
|---|---|---|
| Network error during the deployment to a device | Network driver missing in the boot image | 1. Ensure that the driver for the network card you are using is in SDS Database. If not, please add it (See Adding a driver ("Add driver" operation)).<br>2. Then, please inject it in your boot image (See Injecting a driver ("Inject Driver(s)" operation)) |
| Error connecting to WDS server share while booting on a device | Server credentials might have changed | 1. Review and update if needed the server credentials as described in Configure the Deployment launcher |
| Nomad Disk not recognized | | 1. Open the SDS Console<br>2. Click on the « Utilities » tab<br>3. Click on « USB stick report »<br>4. Scan the disks |

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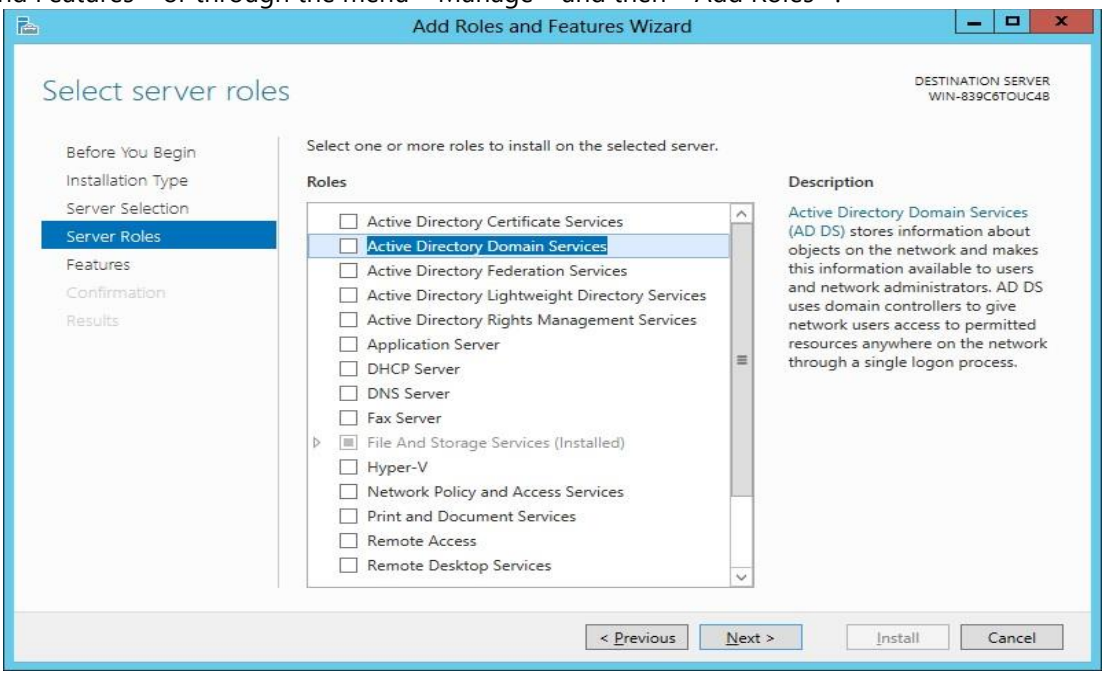
# Appendix

## How to configure Windows Server

The screenshots below might change depending on the Windows Server version used.

### Active Directory domain services

1. Open the Server Manager Dashboard, install « AD DS Services » or « Active Directory domain services » by clicking on « Add Roles and Features » or through the menu « Manage » and then « Add Roles »:




2. Click on Next until reaching the Confirmation screen and put a Check in the box which says "Restart the Destination Server Automatically if required.":

3. Select Yes on the confirmation box, then click Install on the main screen. Click close when it has completed installing.

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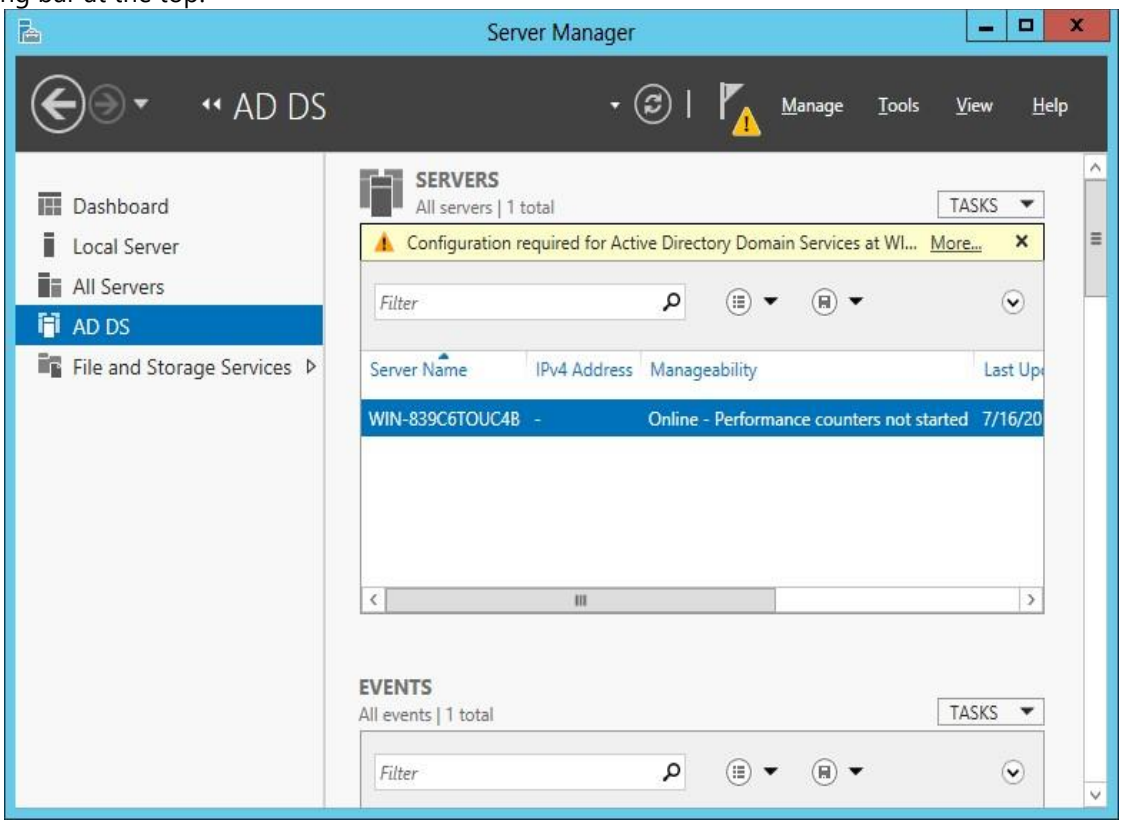
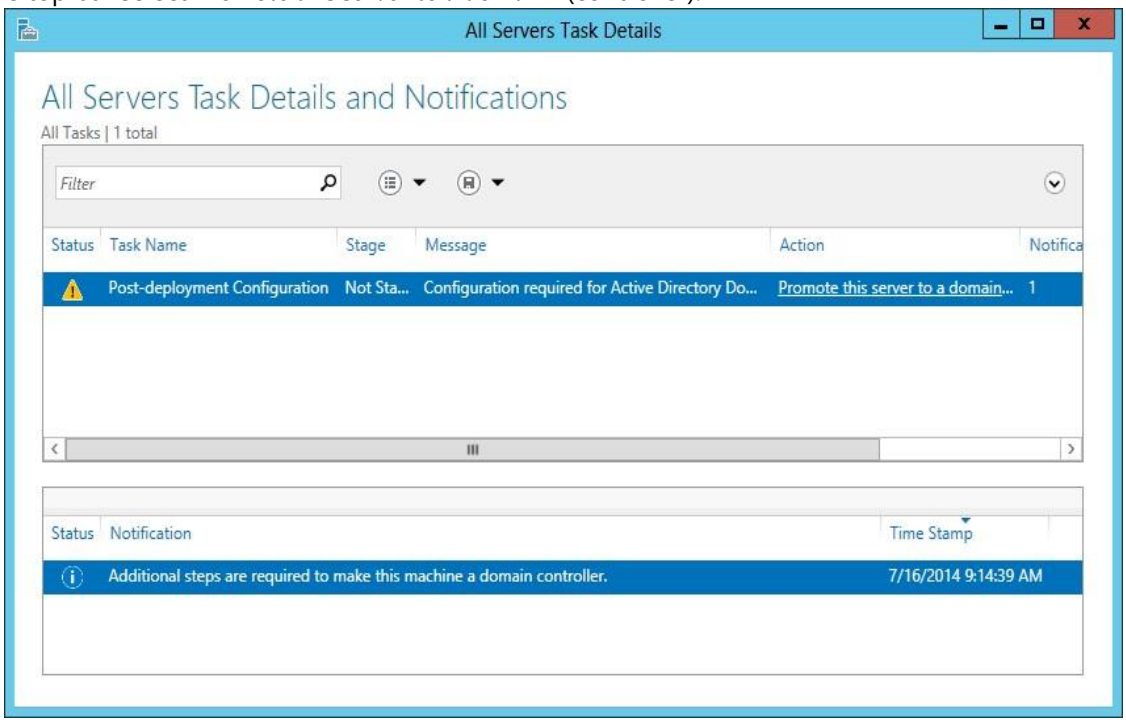
4. In Roles and Server Groups on the Server Manager Dashboard Click on the AD/DS box and Click *More* on the yellow warning bar at the top:




5. On the top bar select *Promote this server to a domain...*(controller):

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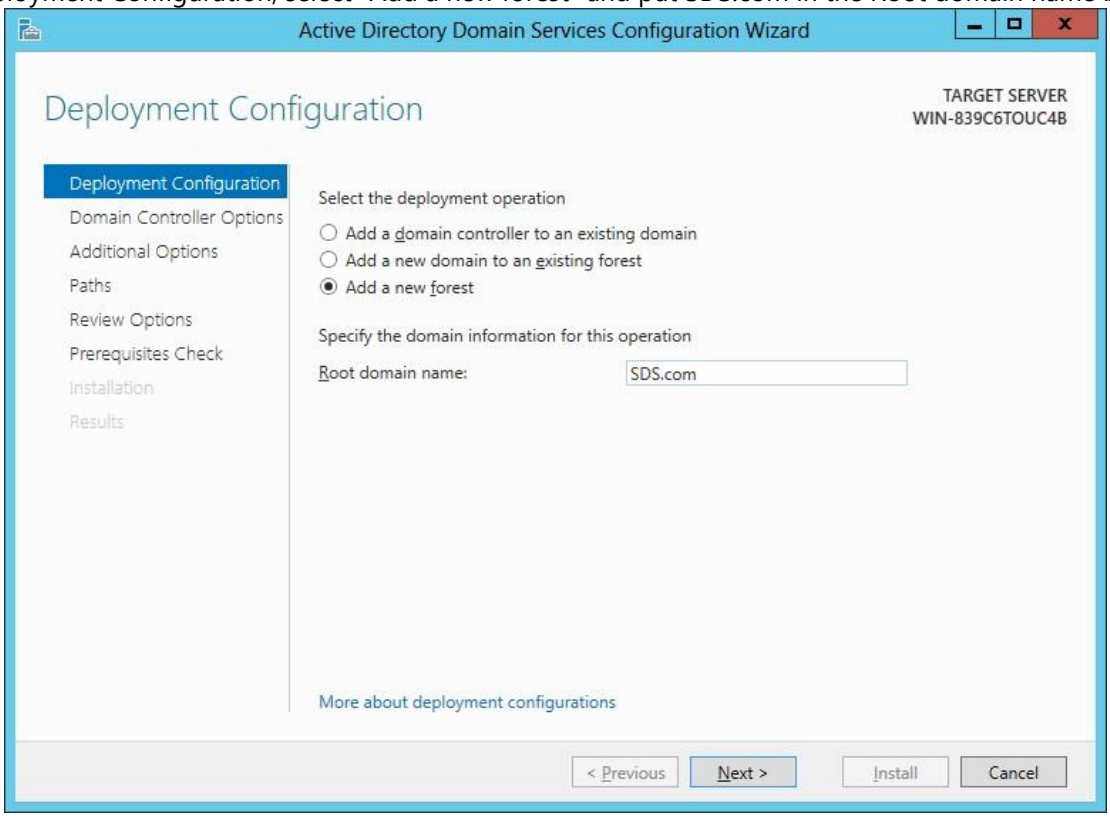
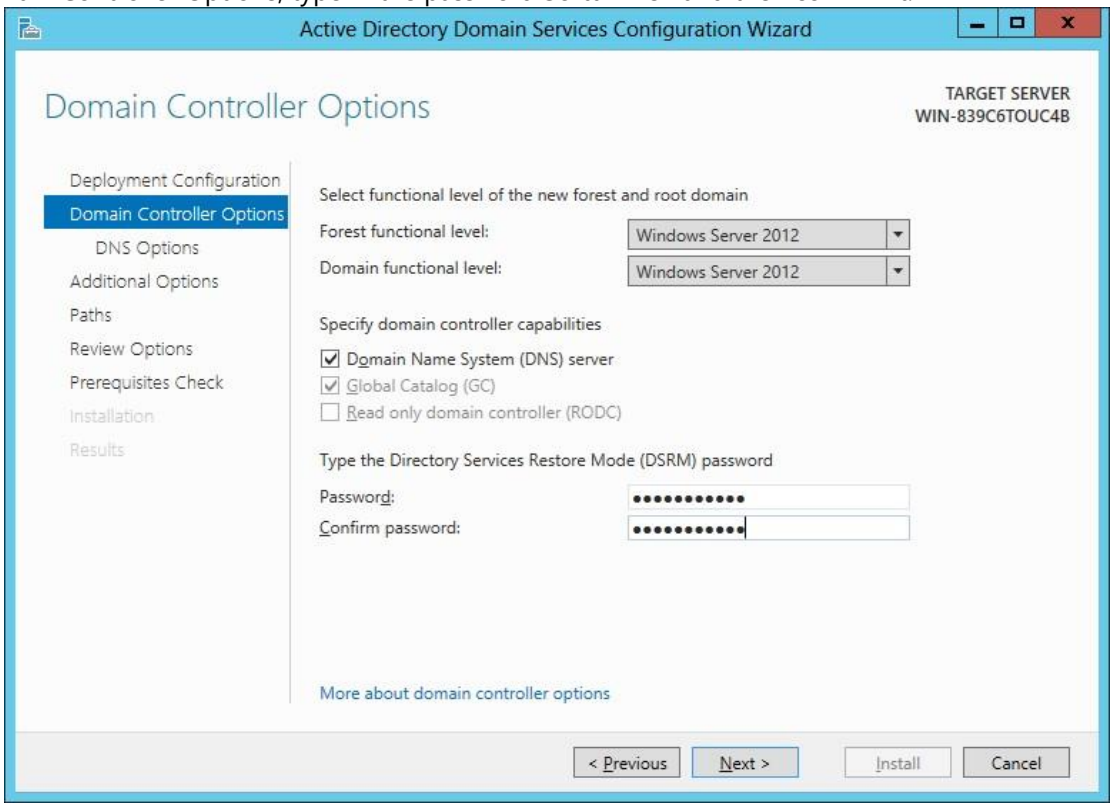
6. In Deployment Configuration, select “Add a new forest” and put SDS.com in the Root domain name box:




7. In Domain Controller Options, type in the password Softthinks1 and then confirm it:

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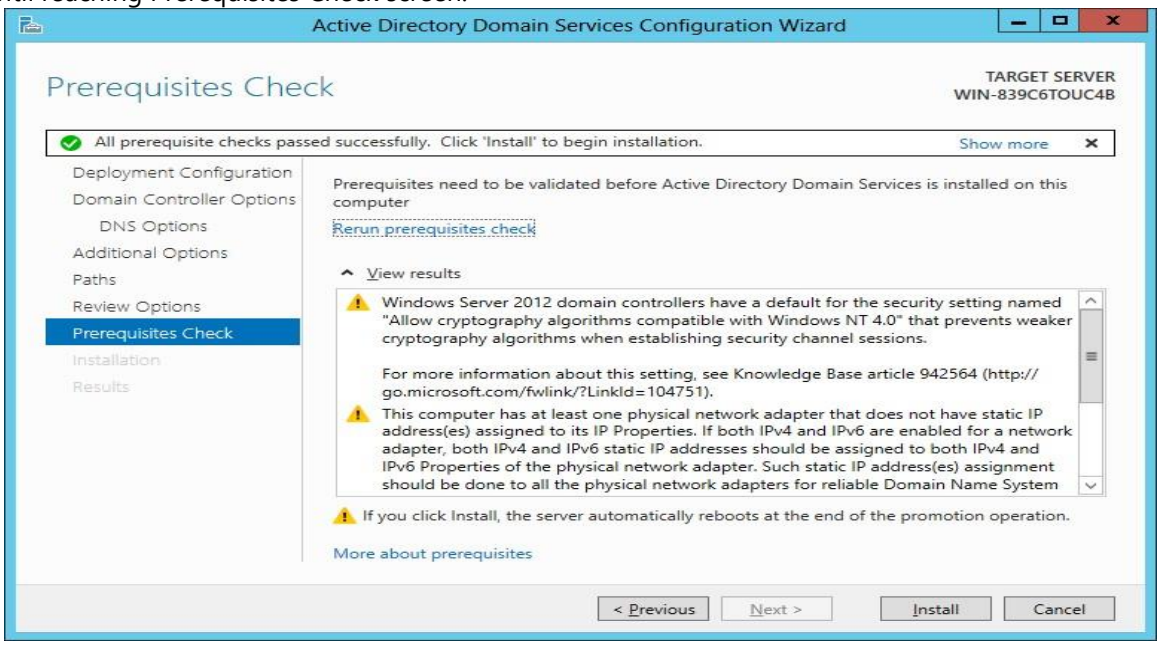
8. Click Next until reaching Prerequisites Check screen:




9. If all Prerequisite checks passed successfully then click Install. Note: You must have the NIC plugged into a switch or the TCP/IP check will fail.

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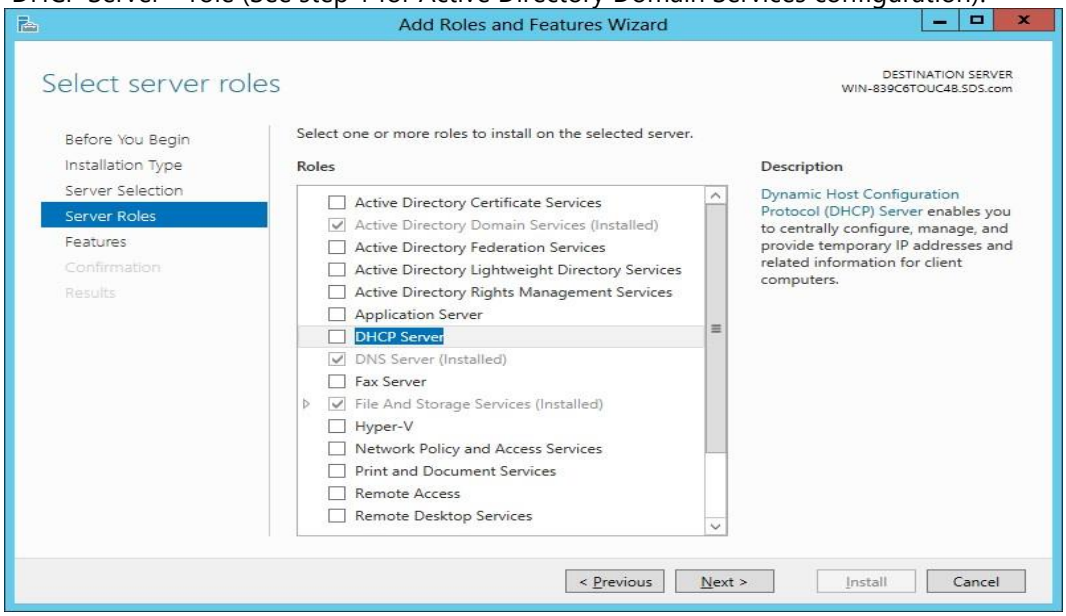
## DHCP Server

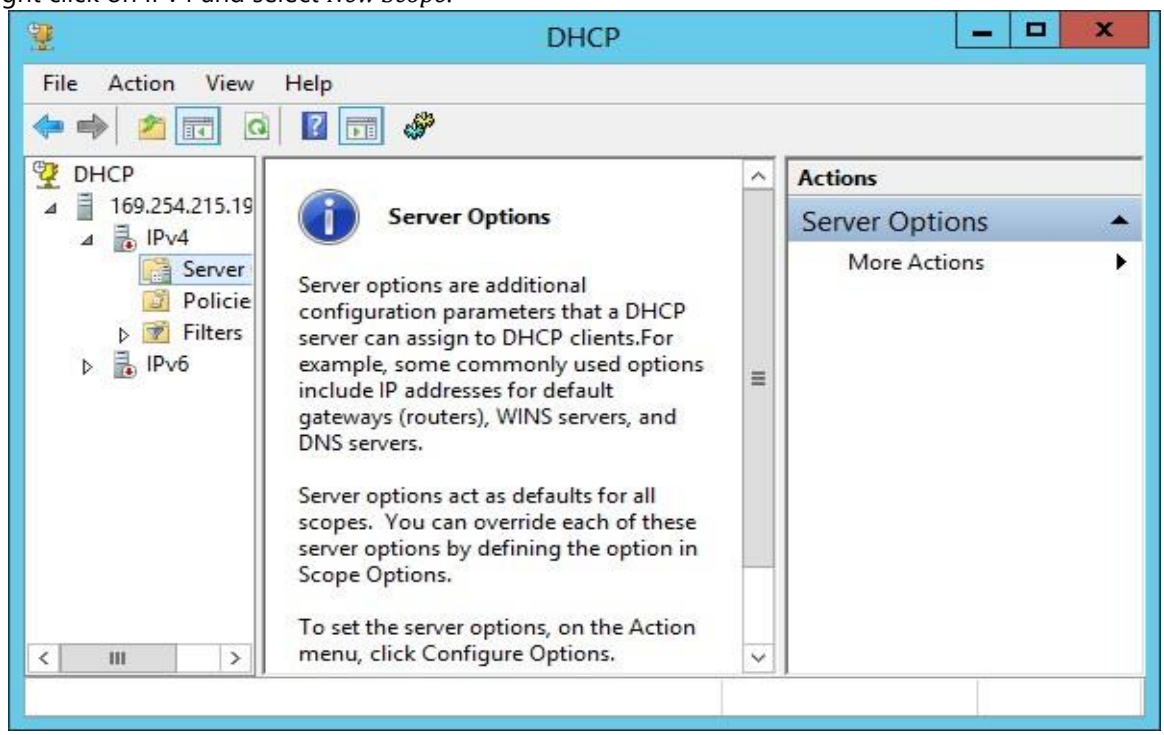
1. Ensure that the Ethernet connection is working

2. Add the « DHCP Server » role (See step 1 for Active Directory Domain Services configuration):




3. Follow the configuration wizard (let default values) and click on Install in the last screen after having checked the option "Restart the Destination Server Automatically if required."

4. From the Server Manager Dashboard Select Tools then *DHCP*, expand out the arrows for 169.254.xxx.xxx and then for IPv4. Right click on IPv4 and select *New Scope*:

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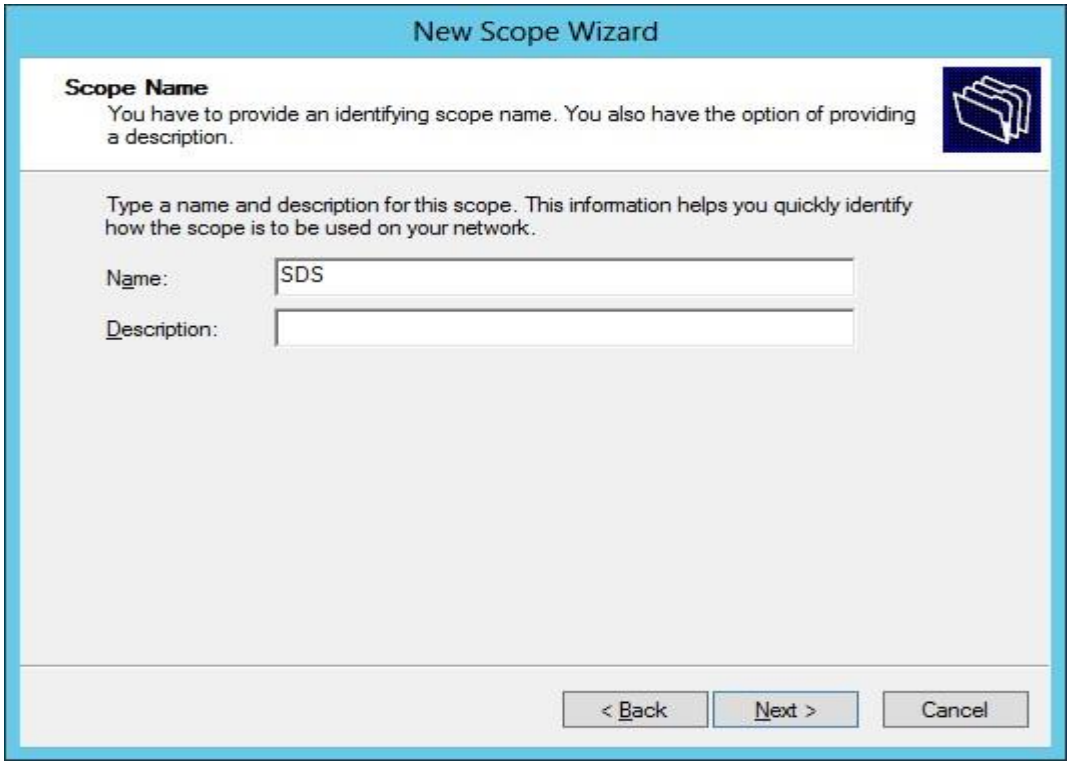
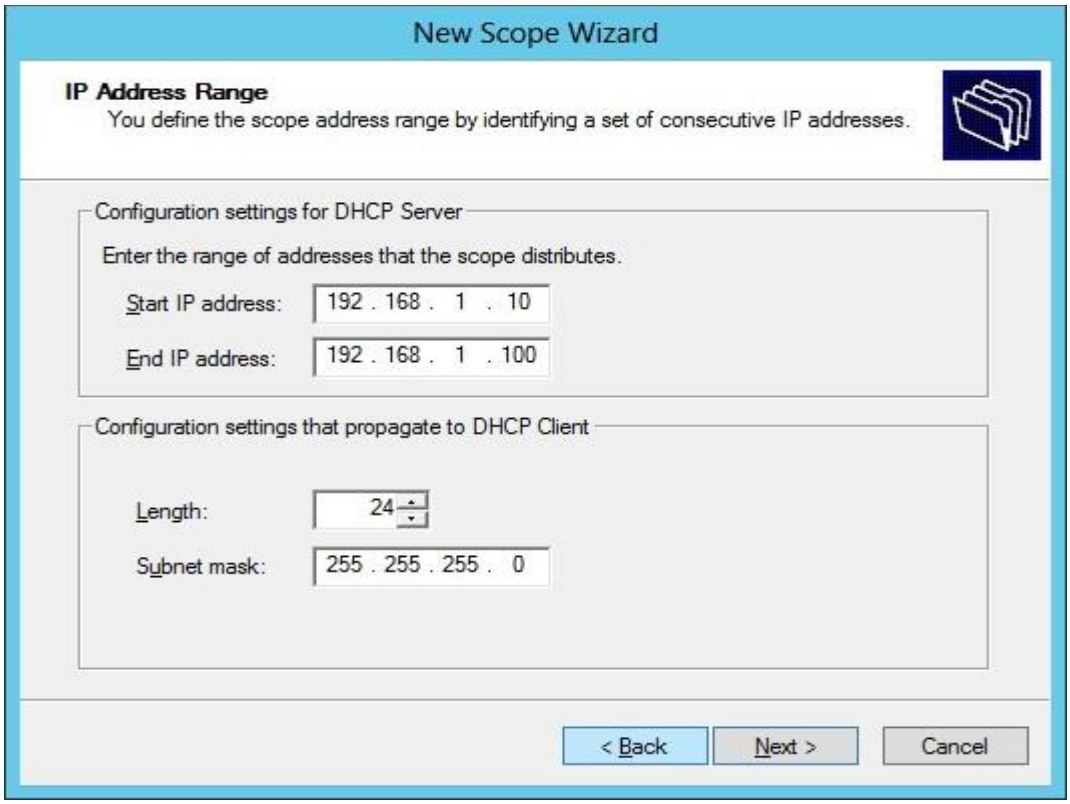
5. Type SDS in as the Name and click Next.




6. Type in Start IP address 192.168.1.10 and in End IP address 192.168.1.100:

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7. Click Next and Next Again and then set the Lease Duration to 4 hours

8. Click Next, Next, Next, Next, Next, Next, and then Finish. Close out of the DHCP Window.

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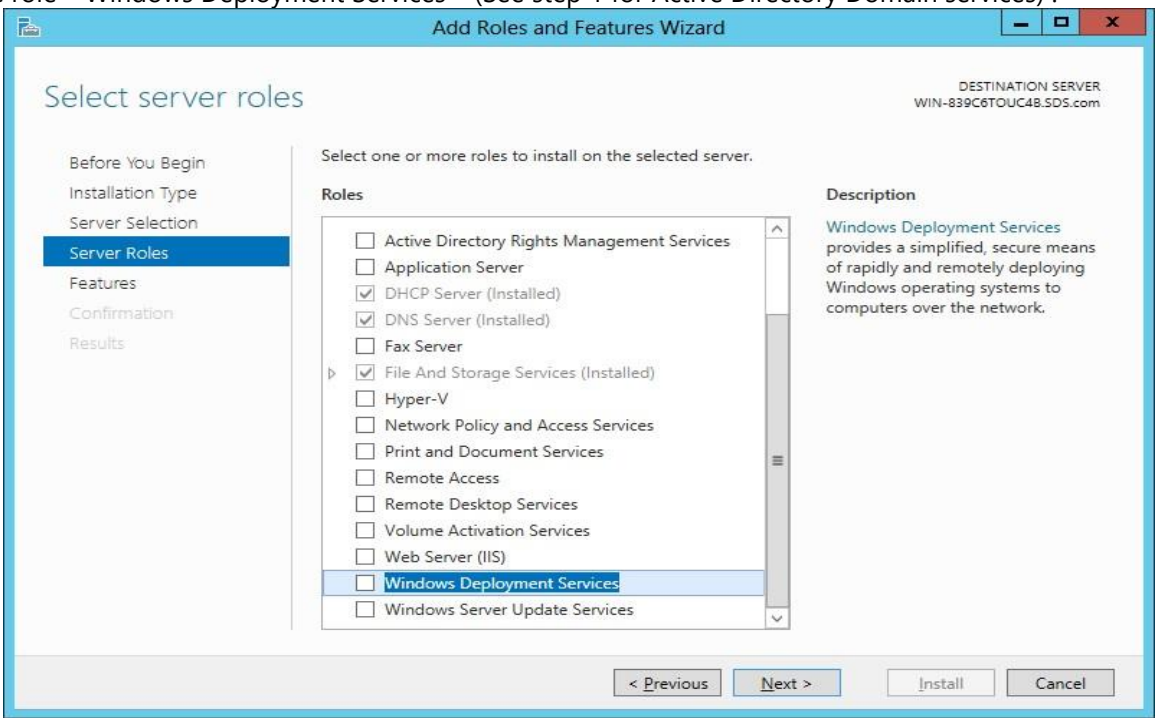
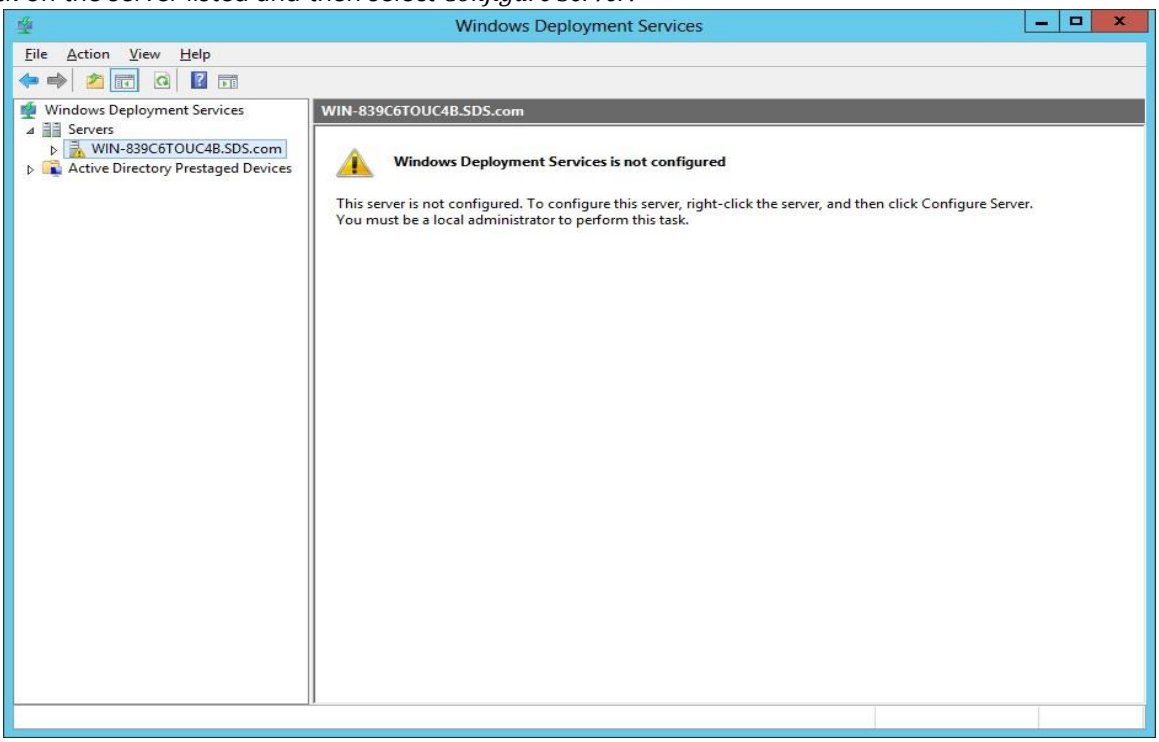
## Windows Deployment Services

1. Add the role « Windows Deployment Services » (See step 1 for Active Directory Domain services) :




2. Follow the configuration wizard (let default values) and click on Install in the last screen after having checked the option "Restart the Destination Server Automatically if required."

3. From the Server Manager Dashboard Select Tools then *Windows Deployment Services*. Expand the arrow by Servers, right click on the server listed and then select *Configure Server*:

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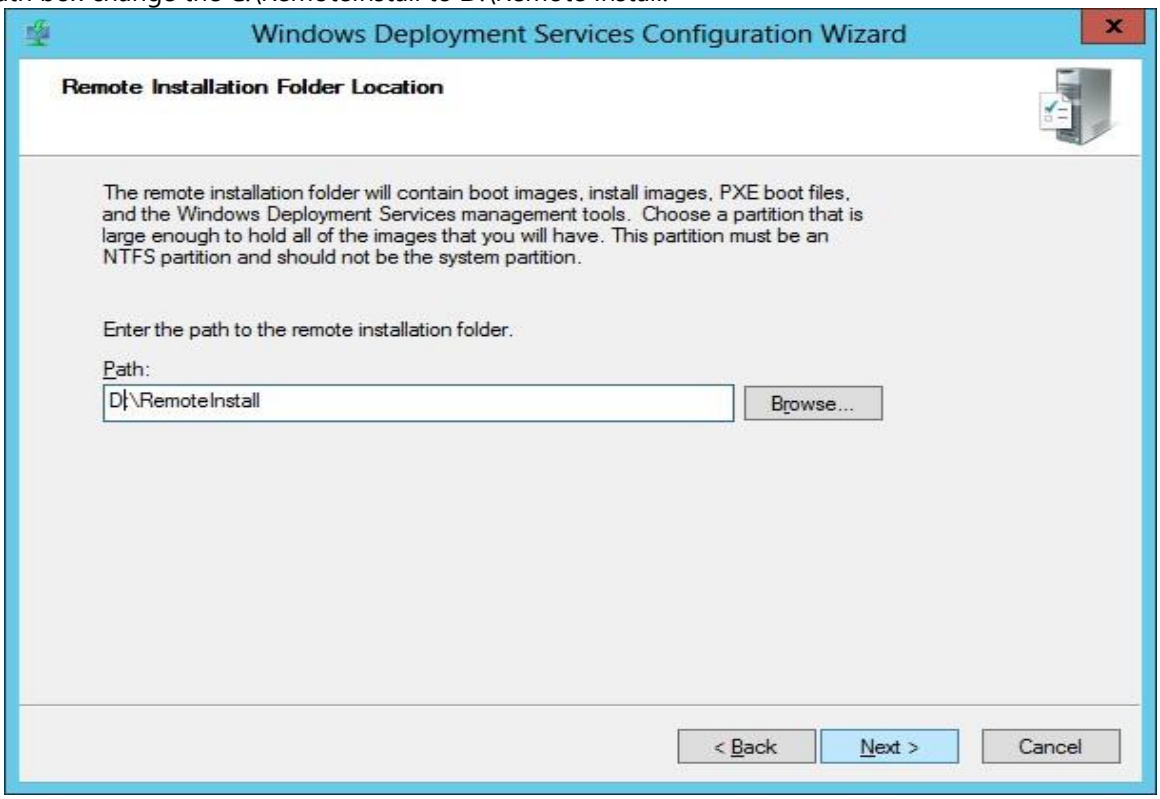
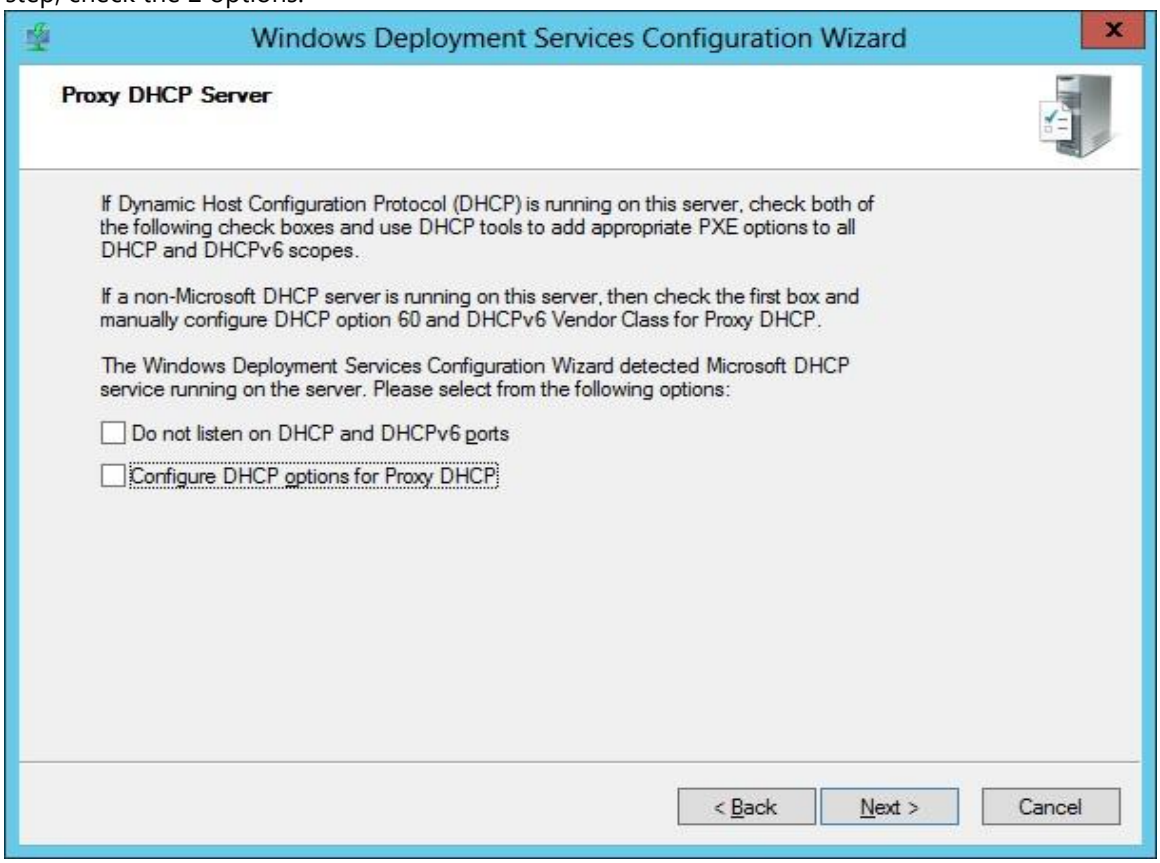
4. In the Path box change the **C**:\RemoteInstall to **D**:\Remote Install:




5. On next step, check the 2 options:

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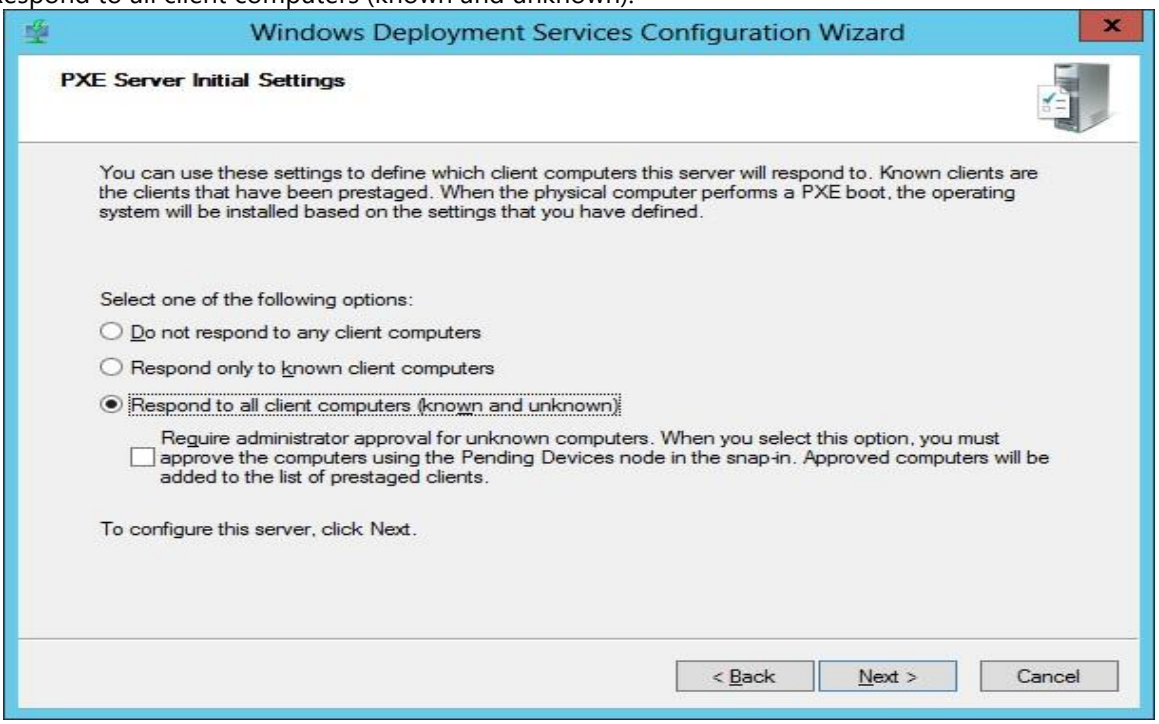
6. Select Respond to all client computers (known and unknown):




7. Close out of the Windows Deployment Services Window when it completes.

8. Ensure that the remote installation folder set in step 4 is shared as « reminst » with Full Control to « Everyone »

9. Verify that PXE is working with a test PC. If so, execute SDS installer (launch setup.exe in installer folder).

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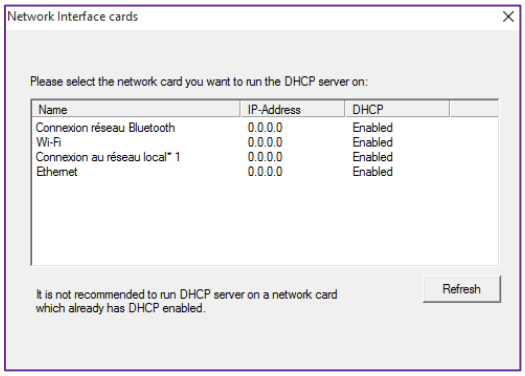
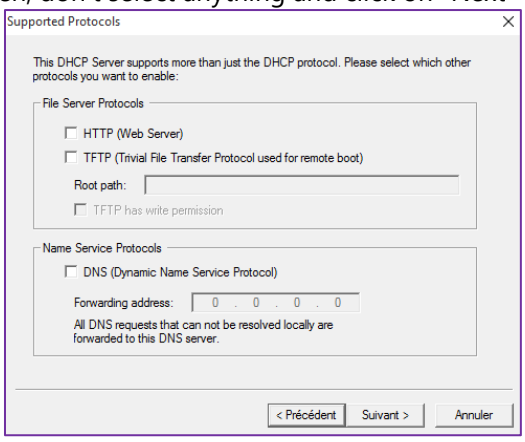
# How to configure DHCP on a non-server edition of Windows

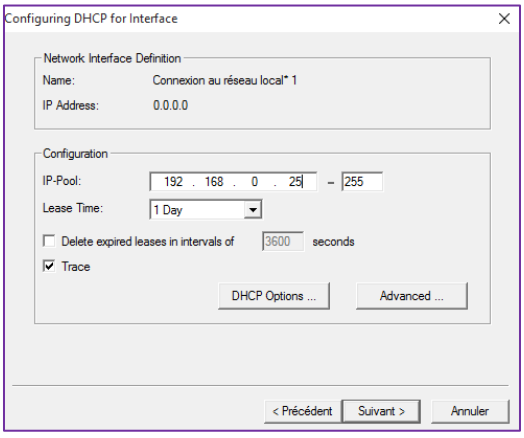
1. Download DHCP Server from http://www.dhcpserver.de/cms/
2. Copy the folder dhcpsrv2.5.2 to remoteinstall folder
3. Launch dhcpwiz.exe
4. Click on “Next >” button
5. Select your LAN card, and click on “Next >” button:




6. In the “Supported Protocols” screen, don’t select anything and click on “Next >” button:




7. Select you IP range and click on “Next” button:

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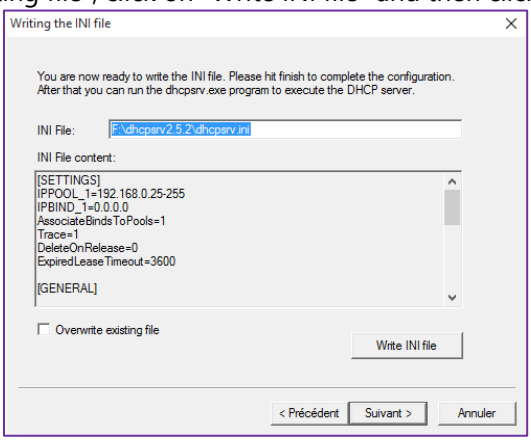
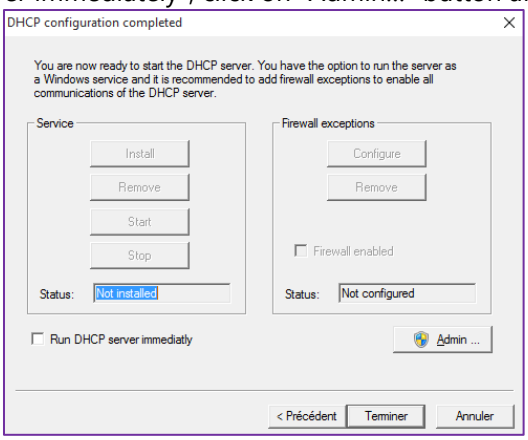
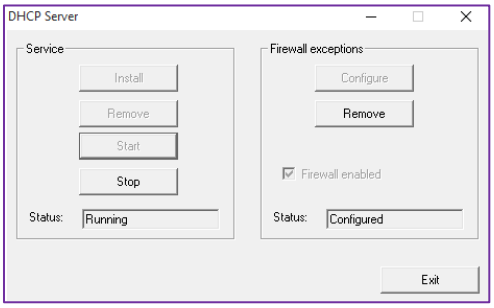
8. Check the option “Overwrite existing file”, click on “Write INI file” and then click on “Next >” button:




9. Check the option “Run DHCP server immediately”, click on “Admin…” button and then on “Finish” button:




10. The DHCP service is now running:

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# How to customize the welcome menu

## Script.xml

Initially we need to declare the module SDSWelcome in the « Components list »:

```
<Components_List>
<!-- Modules loaded at startup...-->
        <component Name="Welcome" Path="MODULES\SDSwelcome.dll" Id="101">
        </component>
```

Then, we have to call the module:

```
<Item Name="Example" ... >
        <!-- SDSWelcome -->
        <Module Id="101" ConfigFile="Xxxx.ini" Param1="0" Param2="0" FullScrn="0">
</Module>
```

There is no parameter for SDSWelcome module but we need to declare it for the module call.

Since SDS 18.0, script variables are now fully using 'unsigned long' range from 0 to 0xFFFFFFFF.

## SDSWelcome.ini

In the section « General » you define the main settings:

**Mode** is the user interface you want (radio buttons, check box, combo box)

Nb_Btn_Top = Number of buttons on top of the screen.
Nb_Btn_Down = Number of buttons in the main part.

Btn_Top_1 = first button on top.
We can define the buttons type (on top) we want, text field (Edit control -> 0) or combo box (Combo control -> 1).

In this example, we define a specific rule.
The « button » is **a text field** that accepts only numeric characters and having a max length of 9.
To validate you need **9 characters**. The digit is **divided in 2** parts. The first part is only one **numeric character and has to be 0**. The second part contains **8 numeric characters** (no other rules).

*Type_Btn=0* -> **text field**
*; 0 -> Edit control*
*; 1 -> Combo control*

*Btn_Text=IDS_TEXT_1*

*Nb_Part=2* **-> divided in 2 parts**

*Nb_Digit_Part_1=1* ***-> The digit part 1 length is 1***
*; x > 0 Length part = x; x = -1 No limit*

*Type_Digit_Part_1=0|0* -> **the first character has to be numeric and equal to 0**

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*; 0 -> Numeric*
*; 1 -> Alpha*
*; 2 -> AlphaNumeric*
*; | char (digit must be char)*

*Nb_Digit_Part_2=8*
*Type_Digit_Part_2=0* -> **8 numeric characters**

*Min_Length=9*
*; x > 0 string length must be sup or equal to x; x = -1 no min*

*Max_Length=9* **->*the* string length is equal to 9**
*; x > 0 string length must be inf or equal to x; x = -1 no max*

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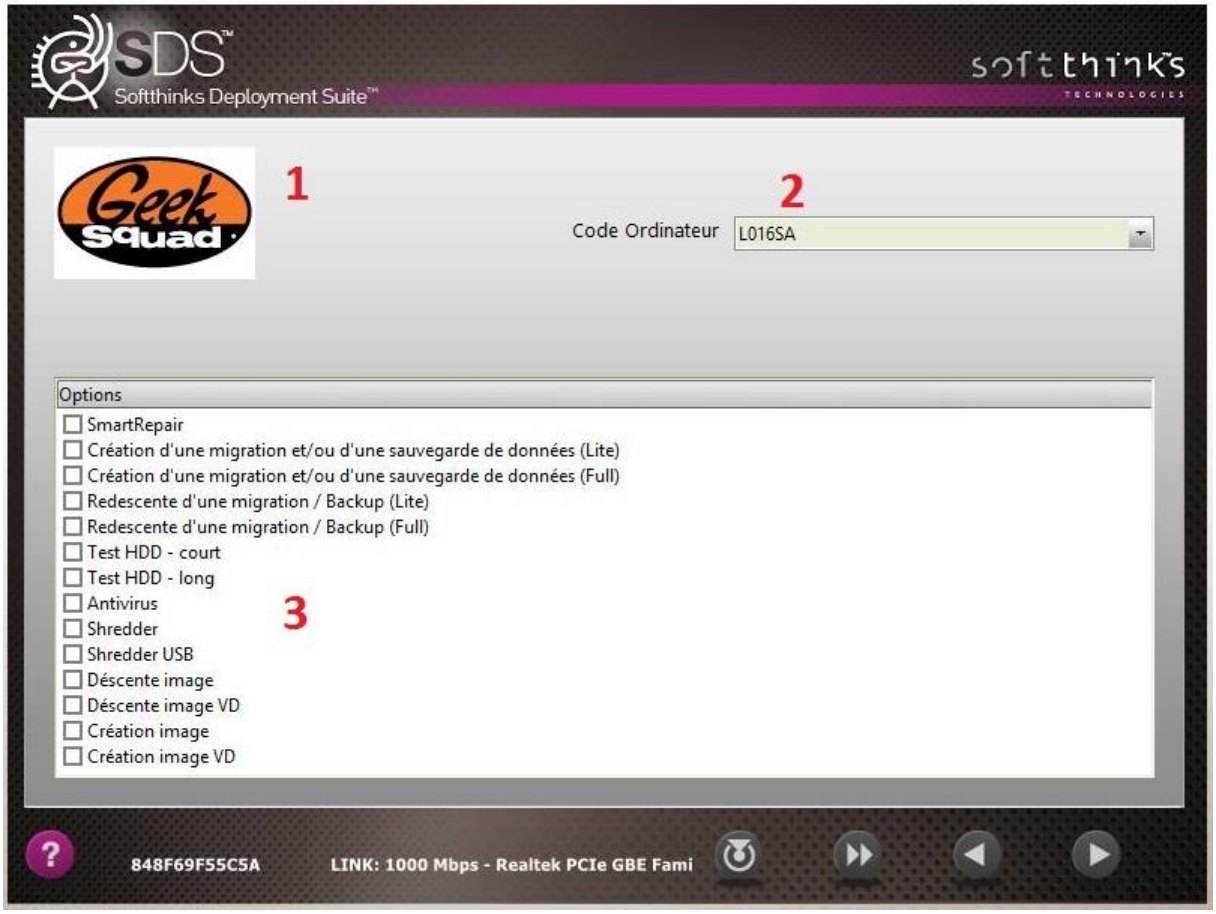
Example




**Please note that ";" in the beginning of the line means that you are commenting.**
In this example, we have the following settings:

*[General]*
*; 0 -> radio button*
*; 1 -> CheckBox*
*; 2 -> Button*
*Mode=2* **-> The main menu will be a buttons menu**

*Nb_CustomAction=0*

*; 0 -> No logo*
*; 1 -> show logo*
*; logo file has to be named logo.png and put in Windows\System32*
*Logo=1*

*; max 4*
*Nb_Btn_Top=2 ; 2 buttons*

*; mode = 0 -> 5 max | mode = 1 -> 12 max | mode = 2 -> 10 max*
*Nb_Btn_Down=4*

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```
;HardwareCheck=x        -> 0 no check, 1 check and display dialog, 2 check and exit
;No more used. Kept for compatibility
HardwareCheck=0

DODCheck=0    ; To know if wipe ran correctly. In case of refurbishing it can be useful. SDSWelcome if DOD flag is present you will have a button to continue

BatteryCheck=0 ; Check the battery level defined in section BattLevelcheck.  If battery level is too low you will get a pop up warning. If 0 we check if the device is plugged to AC power

[BattLevelcheck]
Platform=        ; names separated by ';'
BatteryLevel=    ; Percentage

[Logo]
JPG=Logo.jpg

[Btn_Top_1]
; 0 -> Edit control
; 1 -> Combo control
Type_Btn=0       ; Edit control
Btn_Text=IDS_TEXT_1    ; Text in front of the control ("ID" in our example)
Nb_Part=1        ; Useful to split the contents of the control (for example an field with ...). Here we have 1 part which is the default value

; TO DEFINE Edit field mask
; x > 0 Length part = x; x = -1 No limit
Nb_Digit_Part_1=-1

; 0 -> Numeric
; 1 -> Alpha
; 2 -> AlphaNumeric
; | char (digit must be char)
Type_Digit_Part_1=2      ; 1st block contains only letters, no numbers
Nb_Digit_Part_2=6        ; 2nd block contains 6 letters or numbers
Type_Digit_Part_2=2

; x > 0 string length must be sup or equal to x; x = -1 no min
Min_Length=1

; x > 0 string length must be inf or equal to x; x = -1 no max
Max_Length=-1

[Btn_Top_2]
; 0 -> Edit control
; 1 -> Combo control
Type_Btn=1       ; Dropdown combo box
```

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*Btn_Text=IDS_TEXT_2*

*Nb_Entries=2*

*Entry_1=IDS_COMBO_1_DEMO*
*Entry_2=IDS_COMBO_2_DEMO*

*[Btn_Down_1]*
*Result_Code=1*
*Btn_JPG=Repair_auto.png*
*Btn_Text=IDS_BTN_1*

*[Btn_Down_2]*
*Result_Code=2*
*Btn_JPG=Repair.png*
*Btn_Text=IDS_BTN_2*

*[Btn_Down_3]*
*Result_Code=3*
*Btn_JPG=Refurb.png*
*Btn_Text=IDS_BTN_3*

*[Btn_Down_4]*
*Result_Code=4*
*Btn_JPG=OEM.png*

### SDSWelcome.xml

For each button defined previously in the .ini file, we need to write the corresponding text and translation.

<string ID= « IDS_MON_BOUTON_1 »>
<en-US> My translation </en_US>
<fr-FR> My button 1 </fr_FR>

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# How to customize the repair screen

We are still in the SDSWelcome module. In SDSWelcome.ini we have Result_code=2 and in script.xml if we have result_code=2 we relaunch SDSWelcome module.

SmartRepair
User data and settings backup
Appy user data and settings backup
SDS image or SmartImage creation
SDS image deployment
Updates and Report
Hardware Check
Windows Diagnostics

Repair.ini
You can preselect some options by default (the user cannot uncheck them).
You can also link some options to others, meaning that if the user selects an option the wizard will automatically select another option that we will have linked (MultiLink section).

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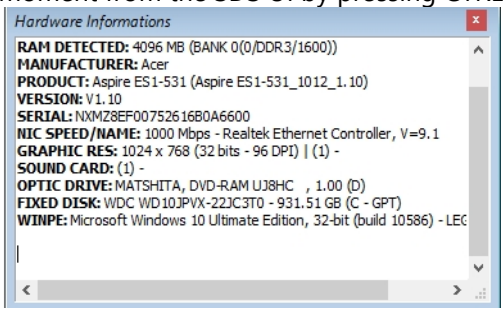
# How to get hardware information from SDS UI

You can get hardware information at any moment from the SDS UI by pressing CTRL+I:

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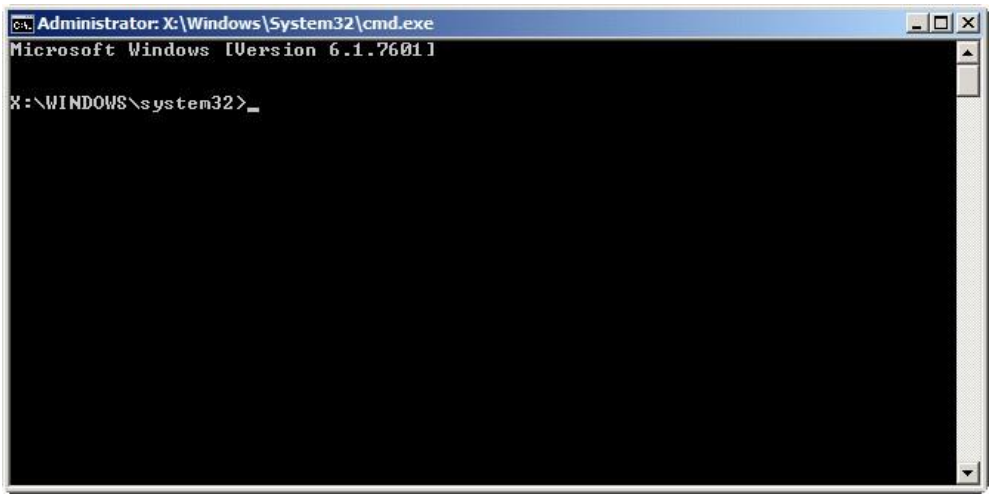
# How to get logs required for support purpose

When an error occurs during any process, it is important to grab the logs which will be very helpful in order to diagnose the issue and solve it.

On client side, the logs from the RAMDrive R: are temporary and used to diagnostic a deployment in case of troubles.
They are duplicated on the server in reminst\sdkdb\temp. It means that the temp folder will have a folder with all deployment log for each computer booting in WinPE environment
Some logs are generated by SDS product and others from the Microsoft WinPE boot process.
The XML

1. Press Ctrl + Alt + D to open a command prompt (press Ctrl + Alt + D). If a dialog box appears to ask you a password, type "sds" and click on “OK” button:




2. Plug a USB key and make note of the letter which is assigned to it. You can launch notepad.exe and select ”Open” command to see all the drive letters:

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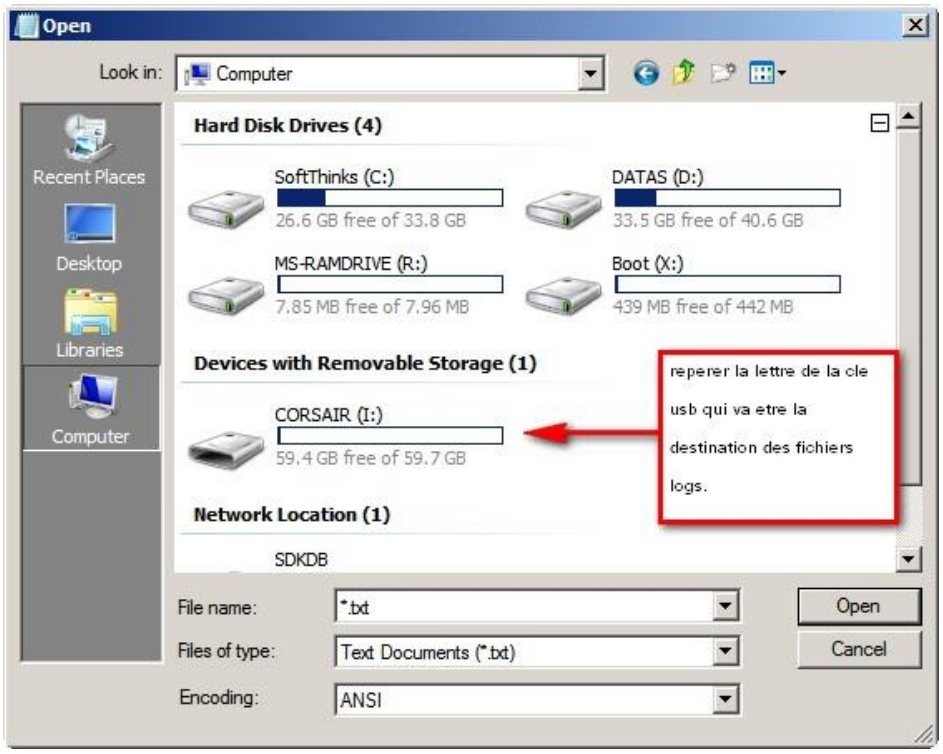
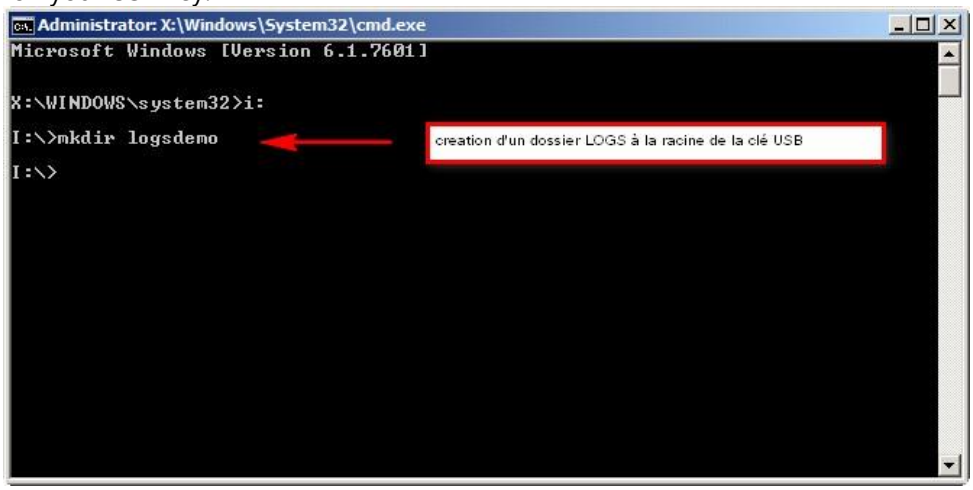



3. Create a folder on your USB key:




4. Go to the RAM Drive R:

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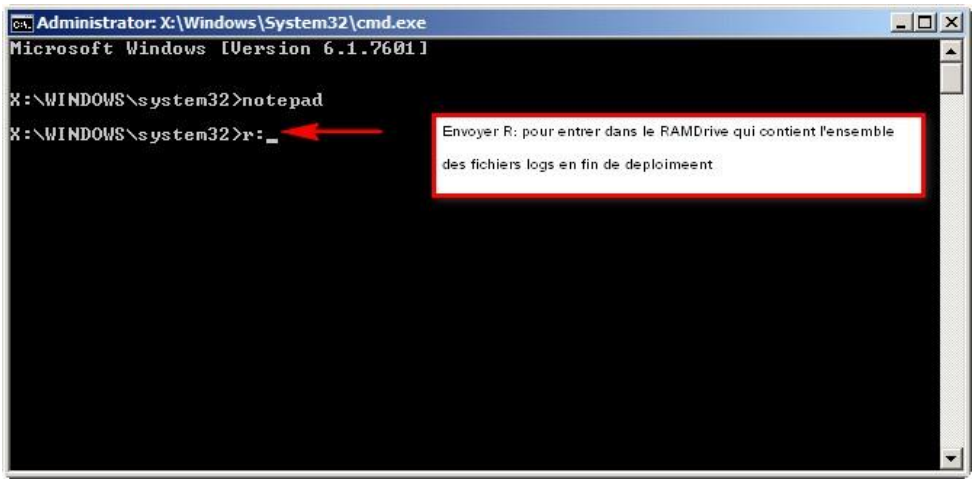


5. Copy all the files from the RAM Drive to your USB Key:

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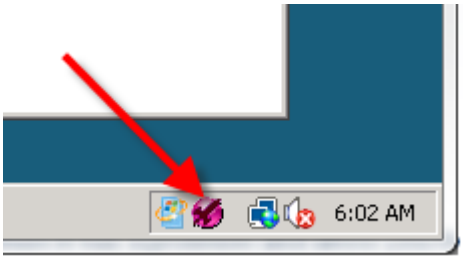
# How to update the license

Please do the following steps to send us the licensing code for the server and we can send you back an activation code.

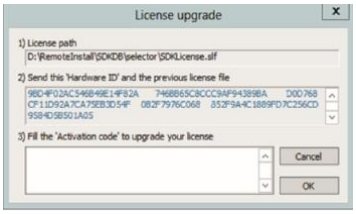
1. Go to the desktop of the server.

2. Look for a small icon will by your clock that is purple/pinkish and says SoftThinks Selector Service when you do a mouse over.
    a. If that Icon is not there, Navigate to the Remoteinstall\SDKDB\Selector Directory and run SelectorSRVG.exe and the Icon will appear.
    b. You may have to click the arrow next to the clock to show all the running icons.




3. Right Click on this icon and select Upgrade License :

4. The License Upgrade Dialog box will open :




5. Send us the text from Step 2 in the License Upgrade Screen, and the SDKLicense.slf file from the RemoteInstall\SDKDB\Selector directory.

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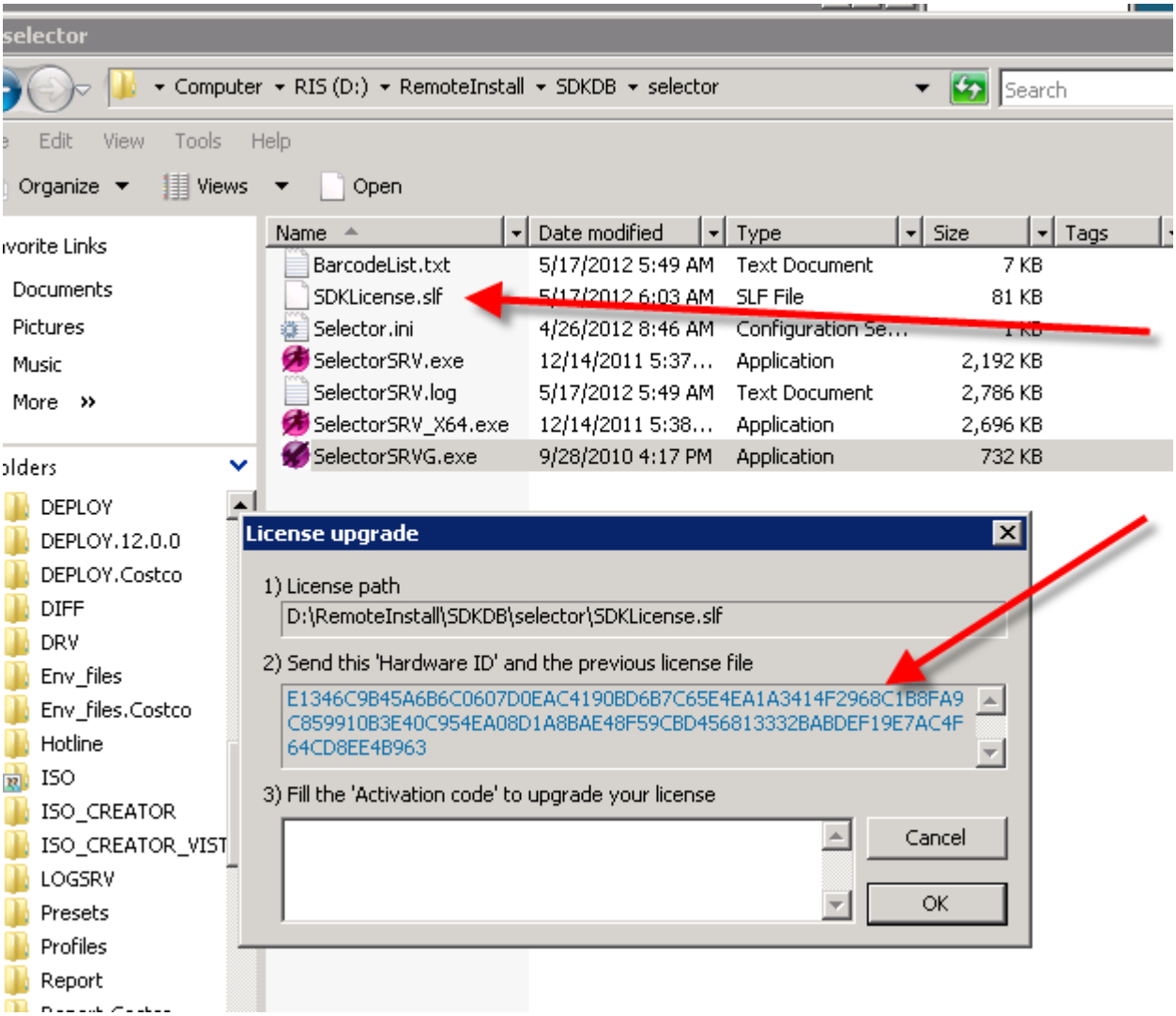


6. Once we have that we can send you back the upgrade key that you will paste into the "Fill the 'Activation code' to upgrade your license field, then click OK to renew the license.

**NOTE: Do not close the License Upgrade window until you get the Activation code from us.**

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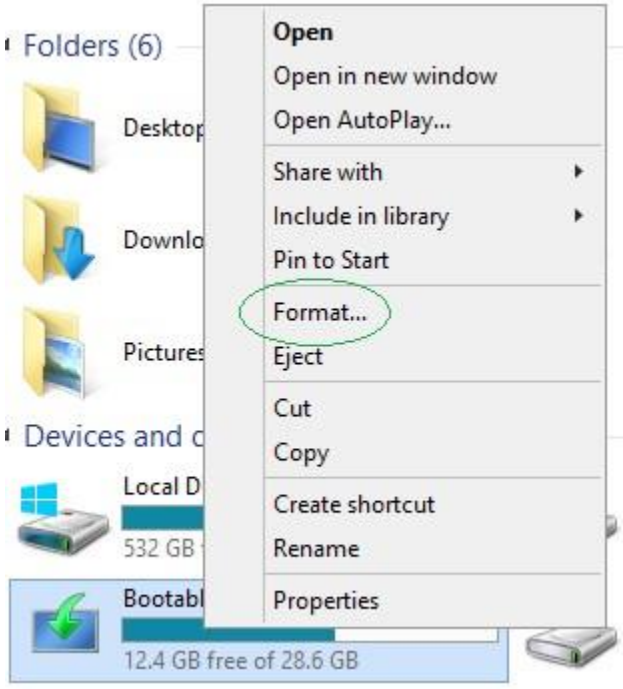
# How to format a USB Flash Drive before converting it to a SDS USB Flash Drive

Formatting USB Flash Drive

1. Plug flash drive of at least 8GB into USB port on server.

2. Open File Explorer and locate the flash drive

3. Right click on the flash drive and select “Format”.

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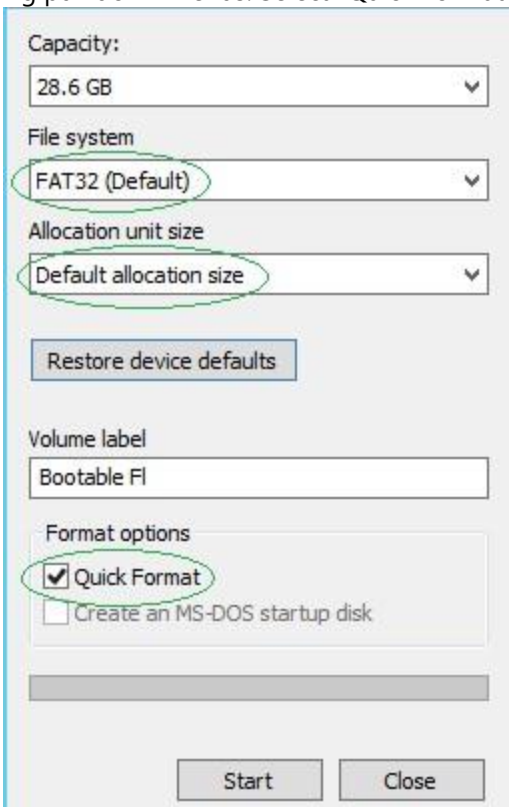
4. Select Restore Device default. In most cases this will set the format to “FAT32” and “Default Allocation Size”. If it does not, select these options from the corresponding pull down menus. Select “Quick Format” check box.




6. Click Start.

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# How to boot from Bootable USB Flash Drive with USB Ethernet adapter

The Bootable USB Flash Drive will allow a unit that does not have an Ethernet port onboard to connect to the SDS Server using a USB Ethernet Adapter.

1. Ensure the device, laptop, desktop or tablet PC is able to boot to USB in the units BIOS.
2. Plug Bootable USB Flash Drive into an available USB port.
3. Plug USB Ethernet adapter into USB port and connect to network via Ethernet cable.
4. Power on the device and it should boot to the USB drive as default.

**Note:** Most brands of USB Ethernet Adapters are supported by the boot image on the USB Flash Drive or have drivers built into the adapter. On rare occasions, the boot image might not have the driver needed for the USB Ethernet Adapter. This driver can be added to the boot image through the SDS Console (See Injecting drivers (“Inject Driver(s)” operation)).

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# How to prepare the database for the “Update database components” feature

1. Define the baseline (the deploy folder, and deploy64 selector) with all files updated.
2. Open the console by selecting the master.log from the reference database
3. Export into xml and rename it to update.xml (this file will be required on the FTP to accelerate the comparison between the base used and the baseline).
4. Prepare an sdkdb_update folder containing the deploy64, deploy, and selector folders from the baseline + update.xml. It is mandatory that the update.xml file corresponds to the deploy, deploy54 and selection contents in terms of files (version & CRC) and if there is any difference the update.xml file must be regenerated.

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# How to edit SPL Files

## SPL File Naming Convention

The existing sales order system and manufacturing process should be considered when deciding the naming convention to allow for a seamless integration.
The SPL file name must begin with “S” and not exceed 11 characters including “S”.
Example: S1234567890.SPL or SModelx.SPL.
Do NOT use any characters other than Alphanumeric ones (NO spaces, dashes, punctuation, etc.).

**Dynamic SPL Naming Convention**

Here are some examples that can be used to create a dynamic SPL per system:

- S%SerialNumber%.SPL
- S%SalesOrderNumber%.SPL

**Static SPL Naming Convention**

Here is an example that can be used to create a static SPL for multiple systems:

- S%ProductName%.SPL

## System DMI Requirements

Here are the pre-defined System DMI field requirements for deployment using an SPL file. The chosen DMI field must match the name of the SPL file naming convention.

**System DMI Serial Number Field**

An Original Equipment Manufacturer (OEM) or an Original Design Manufacturer (ODM) may choose to use the system DMI serial number field (Type1 or Record1):

- Serial Number (SS): %SerialNumber%
- Serial Number (SS): %SalesOrderNumber%

**System DMI Product Name Field**

An OEM or ODM may choose to use the system DMI product name field (Type1 or Record1):

- Product Name (SP): %ProductName%

The DMI field name must not begin with (S) and not exceed 10 characters.
Ex: 1234567890 or Modelx. Do NOT use any characters other than Alpha/Numeric (NO spaces, dashes, etc.).

**Note:** The OEM or ODM is responsible for creating the SPL file. This will require development efforts to setup and maintain a translation program. The translation program will need to convert the existing part numbers to the SDK part number format and generate the SPL file.

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## SDK Part Number Format

The format used for part number scheme and revision control is the following:

- XXXXXX-XXX-XXX

Here are the pre-defined part number format requirements for deployment.

- A = Applications
  Ex: A00001-001-001
  Applications using silent installs, MSI, Installshield, etc.
- D = Drivers (Required if PnP is not used)
  Ex: D00001-001-001
  Device drivers using a PnP enumeration via .inf files.
- Q = QFE
  Ex: Q00001-001-001
  Security patches and updates.
- B = Bundle
  Ex: B00001-001-001
  Applications tied to hardware (link to PnP device ID).
- S = OS
  Ex: S00001-001-001
  Operating System.
- I = Smart Image
  Ex: I00001-001-001
  Smart Image may contain combination of hardware and software.
- P = Partition Scheme (hard coded)
  Ex: P00001-001-001
  Partition scheme based on hard coded numbers.
- T = Tools
  Ex: T00001-001-001
  Tools used for enabling/disabling SDK features (See SDK switches section).
- Z = Tests
  Ex: Z00001-001-001
  Optional deployment tests as specified by the OEM/ODM (See SDK switches section).

## Definable Partition Number (Recommended)

- P0111D-p01-100-1 ; User partition, Windows primary, NTFS format, drive letter assigned, use 100% of total hard disk space.
- P 0111D-p01-050-1 ; User partition, Windows primary, NTFS format, drive letter assigned, use 50% of total hard disk space.
- P0112D-p01-100-1 ; User partition, Windows primary, FAT32 format, drive letter assigned, use 100% of total hard disk space.
- P0112D-p01-050-1 ; User partition, Windows primary, FAT32 format, drive letter assigned, use 50% of total hard disk space.
- P0211E-p01-050-1 ; Partition 2, Windows primary, NTFS format, drive letter assigned, use 50% of total hard disk space.
- P0212E-p01-050-1 ; Partition 2, Windows primary, FAT32 format, drive letter assigned, use 50% of total hard disk space.
- P0212E-p01-025-1 ; Partition 2, Windows primary, FAT32 format, drive letter assigned, use 25% of total hard disk space.
- P0311E-p01-025-1 ; Partition 3, Windows primary, NTFS format, drive letter assigned, use 25% if total hard disk space.
- P0312E-p01-025-1 ; Partition 3, Windows primary, FAT32 format, drive letter assigned, use 25% of total hard disk space.

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### Hard Coded Partition Number

- P00001-000-000 ; No recovery solution.
- P00001-510-000 ; Create system recovery folder, hidden and protected.
- P00001-534-950 ; Create recovery partition at start of disk, hide recovery partition, hide F10 boot key, swap partition table, auto-sizing + 500 MB reserved.
- P00001-536-950 ; Create recovery partition at start of disk, hide recovery partition, show F10 boot key, swap partition table, auto-sizing + 500 MB reserved.
- P00001-537-900 ; Create recovery partition at start of disk, show recovery partition, show F10 boot key, swap partition table, auto-sizing + 1000 MB reserved.
- P00001-537-950 ; Create recovery partition at start of disk, show recovery partition, show F10 boot key, swap partition table, auto-sizing + 500 MB reserved.
- P00001-537-400 ; Create recovery partition at start of disk, show recovery partition, show F10 boot key, swap partition table, 4000 MB Absolute RP size.
- P00001-538-950 ; Create recovery partition at end of disk, hide recovery partition, hide F10 boot key, swap partition table, auto-sizing + 500 MB reserved.
- P00001-541-950 ; Create recovery partition at end of disk, hide recovery partition, show F10 boot key, swap partition table, auto-sizing + 500 MB reserved.
- P00001-540-950 ; Create recovery partition at end of disk, show recovery partition, hide F10 boot key, swap partition table, auto-sizing + 500 MB reserved.
- P00001-539-900 ; Create recovery partition at end of disk, show recovery partition, show F10 boot key, swap partition table, auto-sizing + 1000 MB reserved.
- P00001-539-950 ; Create recovery partition at end of disk, show recovery partition, show F10 boot key, swap partition table, auto-sizing + 500 MB reserved.
- P00001-539-400 ; Create recovery partition at end of disk, show recovery partition, show F10 boot key, swap partition table, 4000 MB absolute recovery partition size.

### SDK Switches

- T00003-700-001 ; Do no production management.
- P00001-000-000 : No recovery solution.
- Z00001-600-001 ; Run no tests.
- T00012-001-001 ; Disable PnP over SPL selection.

### SPL files example

- P0111D-p01-100-1 ; User partition, Windows primary, NTFS format, drive letter assigned, 100% use of remaining hard disk space
- A00061-001-001 ; Branding in Windows (wallpaper)
- T00001-001-001 ; Branding in recovery UI
- S00029-001-001 ; XP Home SP2 English v.1, Windows XP (English)
- A00219-001-001 ; Roxio
- A00226-001-001 ; Application
- A00224-001-001 ; .net Framework
- D00003-002-001 ; Intel 845 G Chipset System 5.0.2.1003
- D00006-001-001 ; Intel 865 Integrated Video Driver
- D00026-001-001 ; RealTek LAN driver 5.606.811.2003

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# How to edit Data Backup configuration file

You can customize the Data Backup behavior by manually editing the SDSBackupMigration.ini file located in \SDSDB\Deploy\Windows\System32\modules\SDSFileBackup.

There are 3 types of Data Backup which can be set through this configuration file:

- **Backup** **:** Users files backup
- **Light Migration** **:** Users files & Settings and OS settings backup
- **Full Migration** **:** Users files & Settings, Applications settings and OS settings backup

```
[SDSFileBackup]
; AutomaticBackup : 0 for Automatic / 1 for Manual
AutomaticBackup=0

CountDown=500

; ArchiveName: Backup name that will appear in Data Backup UI if UseNameType is set to 0
ArchiveName=My Backup

; Backup destination (combination of <NAME> <S/N> and <MAC>)
ArchiveDestination=W:\<NAME>\<NAME>_<S/N>_Backup

; UserNameType: 0 to use the Backup name / 1 to use the MAC Address / 2 to use the Serial Number /3 to use
; the result of a module (requires to specify the module ID and the value to read in NameType3)
; In the example below, we will use the Account Number value set by module SDS Welcome (121)
UseNameType=3
Nametype3=<121>< Account number: >

ArchivePassword=
CapturePhoto=1
CaptureAudio=1
CaptureVideo=1
CaptureDoc=1
CaptureEmail=1
CaptureFinancial=1
CaptureOthers=0

; Map: 1 if you wish to store data backups in a folder outside of SDKDB structure or another device
Map=1
; If Map is set to 1 you need to specify the following information for the data backup target location:
MapDrive=W
Login=
Password=
Domain=
; UncPath=\\<Server IP address>\<shared folder >
UncPath=\\192.168.x.x\x
UncPath2=\\192.168.x.x\x
```

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UncPath3=\\192.168.x.x\Migration

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# How to manually edit WTM configuration files

The SDSconsole for WTM settings use the following files in SDKDB\ENV_FILES\WINVISTA_10_64 or winvista_10:

- WindowsTestManager.xml
- WindowsTestManager_Btn.xml

## WindowsTestManager.xml

**WindowsTestManager.xml** lets you configure all the settings (and also the custom tests) with the SDS Console Test part

```
<root>
	<Settings>
		<mode>auto</mode>	//manual or auto
		<sigverif>on</sigverif>	//Check if drivers are signed or not
		<devmanager_on_error>on</devmanager_on_error>	//Device manager
		<eventviewer_error_report>warning</eventviewer_error_report>
		<Start_in_Audit>off</Start_in_Audit>
		<Start_If_Conflict>on</Start_If_Conflict>
		<ShowSysPrepBTN>off</ShowSysPrepBTN>
		<Rapport_If_Success>on</Rapport_If_Success>
		<Rapport_If_Failed>on</Rapport_If_Failed>
		<ShowEvent>off</ShowEvent>
	</Settings>
	<Multimedia>
		<Test_WAVE>on</Test_WAVE>  //Define all the multimedia tests you want
		<Test_MIDI>on</Test_MIDI>
		<Test_MP3>on</Test_MP3>
		<Test_MIC>on</Test_MIC>
		<Webcam_chk>on</Webcam_chk>
		<Test_HeadPhone>off</Test_HeadPhone>
	</Multimedia>
	<Network>
		<LAN>  //Define all LAN tests you want
			<TestLan>on</TestLan>
			<AutoDHCP>on</AutoDHCP>
			<AutoDNS>on</AutoDNS>
			<IP>192.168.X.X</IP>
			<MASK>255.255.255.0</MASK>
			<GATEWAY>192.168.X.X</GATEWAY>
			<DNS1>X.X.X.X</DNS1>
			<DNS2>X.X.X.X</DNS2>
		</LAN>
		<WLAN> //If you want to test a specific WLAN
			<TestWLan>on</TestWLan>
			<SSID>TEST</SSID>
			<AUTH>open</AUTH>	> // Open, shared, wpa, wpa2, wpapsk, wpa2psk
			<ENC>WEP</ENC // none,wep, tkip, aes
			<KEY>XXXXXXX</KEY>
		</WLAN>
				← cf. end document for Wifi Configuration→
	</Network>
	<Oemreset>
		AutoReseal=on
		Time=15
	</Oemreset>
	<Custom_test>
		<name>hddcheck</name> //add HDD Check
		<FilePath>C:\WinTEST\HDcheck\hddcheck.cmd</FilePath> //Path of hddcheck.cmd
		<Args></Args>
		<Auto_remove>on</Auto_remove> //Removed automatically after being used
```

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```
            <Show>on</Show>
            <Succes_Code>0</Succes_Code>
            <Stop_on_fail>off</Stop_on_fail>
            <LogFile>C:\WinTEST\HDcheck\diagerror.log</LogFile> //change with the real path
      </Custom_test>
      <Custom_test_1>
            <name>BurninTest</name>
            <FilePath>C:\WinTEST\BurnInTest8\bit.exe</FilePath>//Path of bit.exe
-           <Args>-L 0,0,0,0 -D 1 -R -X -C CPU+RAM+3D.bitcfg</Args> //Arguments (see doc Console_-
   _BurningTest Integration Audit Mode for Generic Image)
            <Auto_remove>on</Auto_remove> //Removed automatically after being used
            <Succes_Code>666</Succes_Code>
            <Show>on</Show>
            <LogFile>C:\WinTEST\BurnInTest8\burnsdiag.log</LogFile>  //same path defined in your .bitcfg
      </Custom_test_1>
                        ← cf. end document to send burnin test logs to the server→

      <Custom_test_2>
            <name>Smart_Info</name>
            <FilePath>C:\WinTEST\InfoSmart\Info_Smart.exe</FilePath>//Path of Info_Smart.exe
            <Args>%DEPLOY_LOG%</Args>
            <Auto_remove>on</Auto_remove> //Removed automatically after being used
            <Show>on</Show>
            <Succes_Code>0</Succes_Code>
            <Stop_on_fail>off</Stop_on_fail>
            <LogFile> </LogFile>
      </Custom_test_2>
      <Custom_test_3>
            <name>Keyboard Test</name>
            <FilePath>C:\WinTEST\KeyboardTest\KeyboardTest.exe</FilePath> //Path of KeyboardTest.exe
            <Args></Args>
            <Auto_remove>on</Auto_remove> //Removed automatically after being used
            <Show>on</Show>
            <Succes_Code>0</Succes_Code>
            <Error_Code>1</Error_Code>
            <Stop_on_fail>off</Stop_on_fail>
            <LogFile></LogFile>
      </Custom_test_3>
      <Custom_Report>
            <Status>on</Status>
        <Check_nb>10</Check_nb> //Number of buton you define in WindowsTestManager_CustomReport.xml
      </Custom_Report>
      <Network_Log> //Setup this part to send the logs back to the server
            <Letter>N</Letter>
            <Domain>XX.com</Domain> //Your domain
            <Login>XXXXXX</Login>  //You login
            <Pass>XXXX</Pass> //Your password
            <Path>\\xxx.xxx.x.x\reminst\sdkdb</Path> //Your IP or your Server name
            <SendLog>on</SendLog> // Send logs to the server when exists
      </Network_Log>
</root>
```

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### WindowsTestManager_Btn.xml

The **WindowsTestManager_Btn.xml** file that you can find in the WinTEST root, allows you to modify your main menu (add, remove items)
Enter the same as you did previously in WindowsTestManager.xml.

```
<root>
	<Btn>
		<Custom_test>
			<name>windows_check</name>
		</Custom_test>

		<Custom_test>
			<name>multimedia</name>
		</Custom_test>

		<Custom_test>
			<name>network_settings</name>
		</Custom_test>

		<Custom_test>
			<name>BurninTest</name>
		 </Custom_test>

		<Custom_test>
			<name>hddcheck</name>
		</Custom_test>

		<Custom_test>
			<name>Keyboard Test</name>
		</Custom_test>

		<Custom_test>
			<name>custom_report</name>
		</Custom_test>

		<Custom_test>
			<name>report</name>
		</Custom_test>

	</Btn>
</root>
```

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### Examples

#### WIFI configuration:

| AUTH | ENC |
|---|---|
| WPA<br>WPAPSK | TKIP |
| WPA2<br>WPA2PSK | AES |
| OPEN | NONE<br>WEP |
| SHARED | WEP |

#### Examples for the Wi-Fi

```
<WLAN>
	<TestWLan>on</TestWLan>
	<SSID>TEST</SSID>
</WLAN>

<WLAN>
	<TestWLan>on</TestWLan>
	<SSID>TEST</SSID>
	<AUTH> WPA2</AUTH>
	<ENC>AES</ENC>
	<KEY>XXXXXXX</KEY>
</WLAN>

<WLAN>
	<TestWLan>on</TestWLan>
	<SSID>TEST</SSID>
	<AUTH>open</AUTH>
	<ENC>WEP</ENC>
	<KEY>XXXXXXX</KEY>
</WLAN>
```

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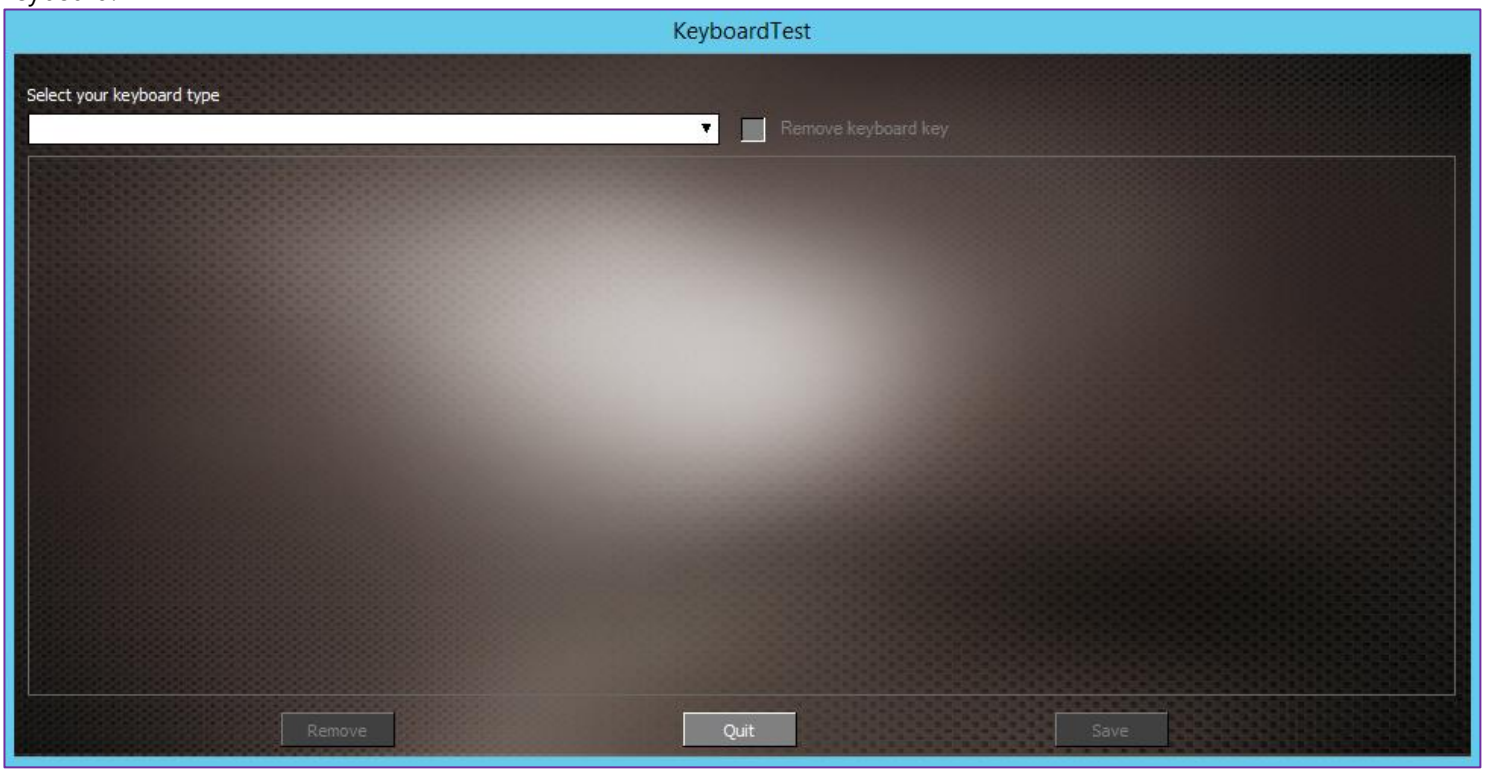
# How to manage keyboard layouts for keyboard test

Launch "**`KeyboardTest.exe /edition`**" to manage the keyboard layouts that are offered when you test the keyboard:

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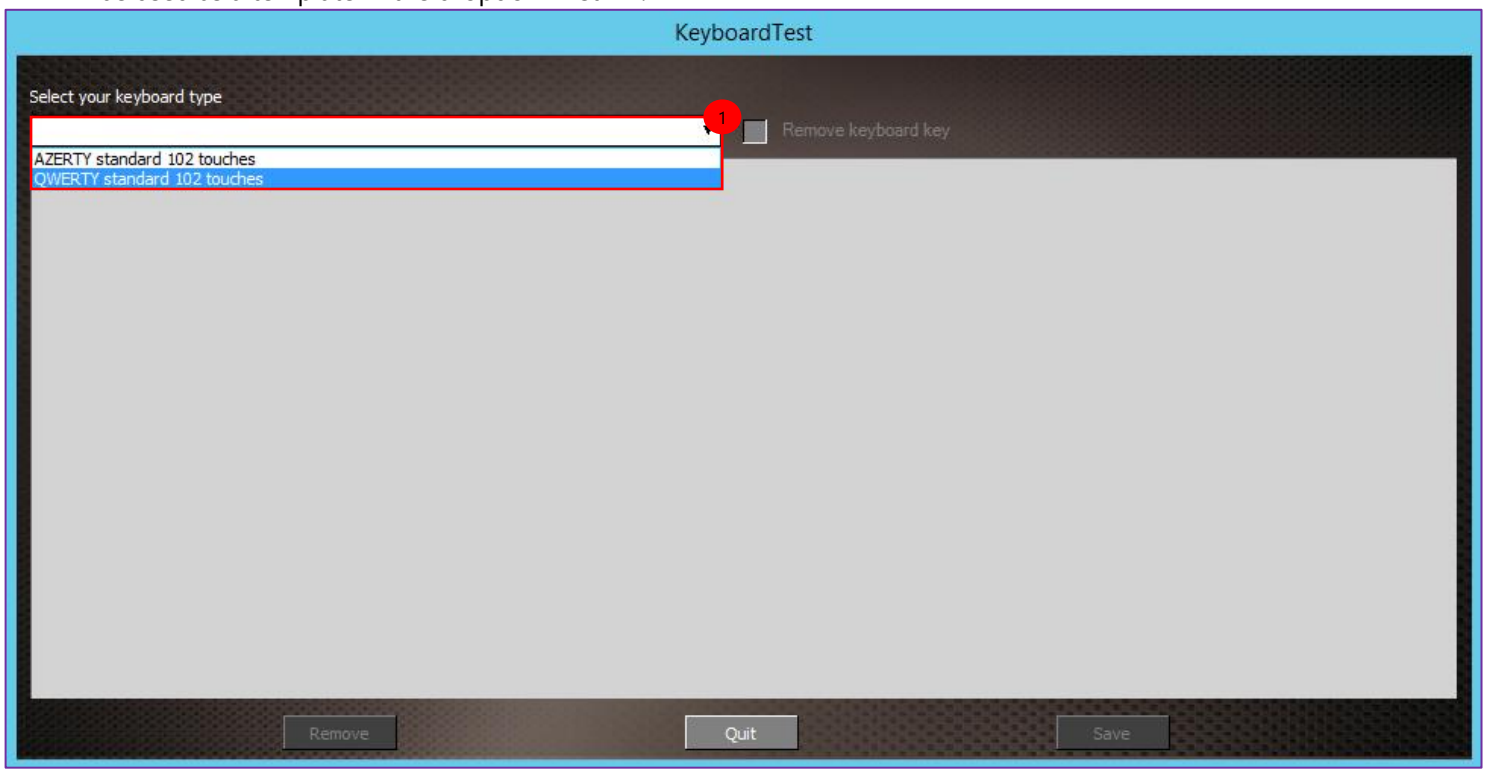
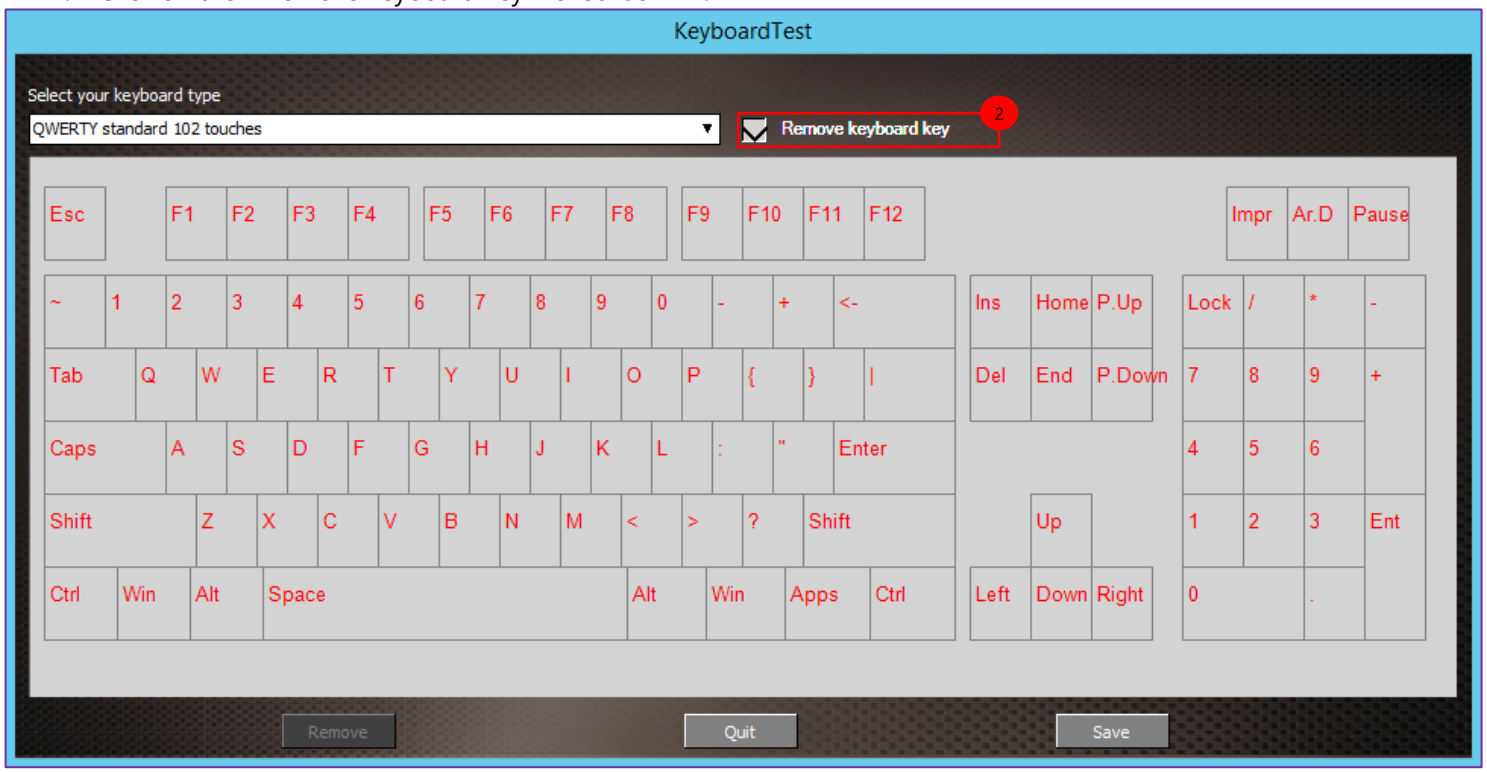
## Adding a new keyboard layout

1. Select a pre-defined keyboard layout (“AZERTY standard 102 touches” / “QWERTY standard 102 touches”) which will be used as a template in the dropdown list[1]:




2. Click on the « Remove keyboard key » checkbox[2]:

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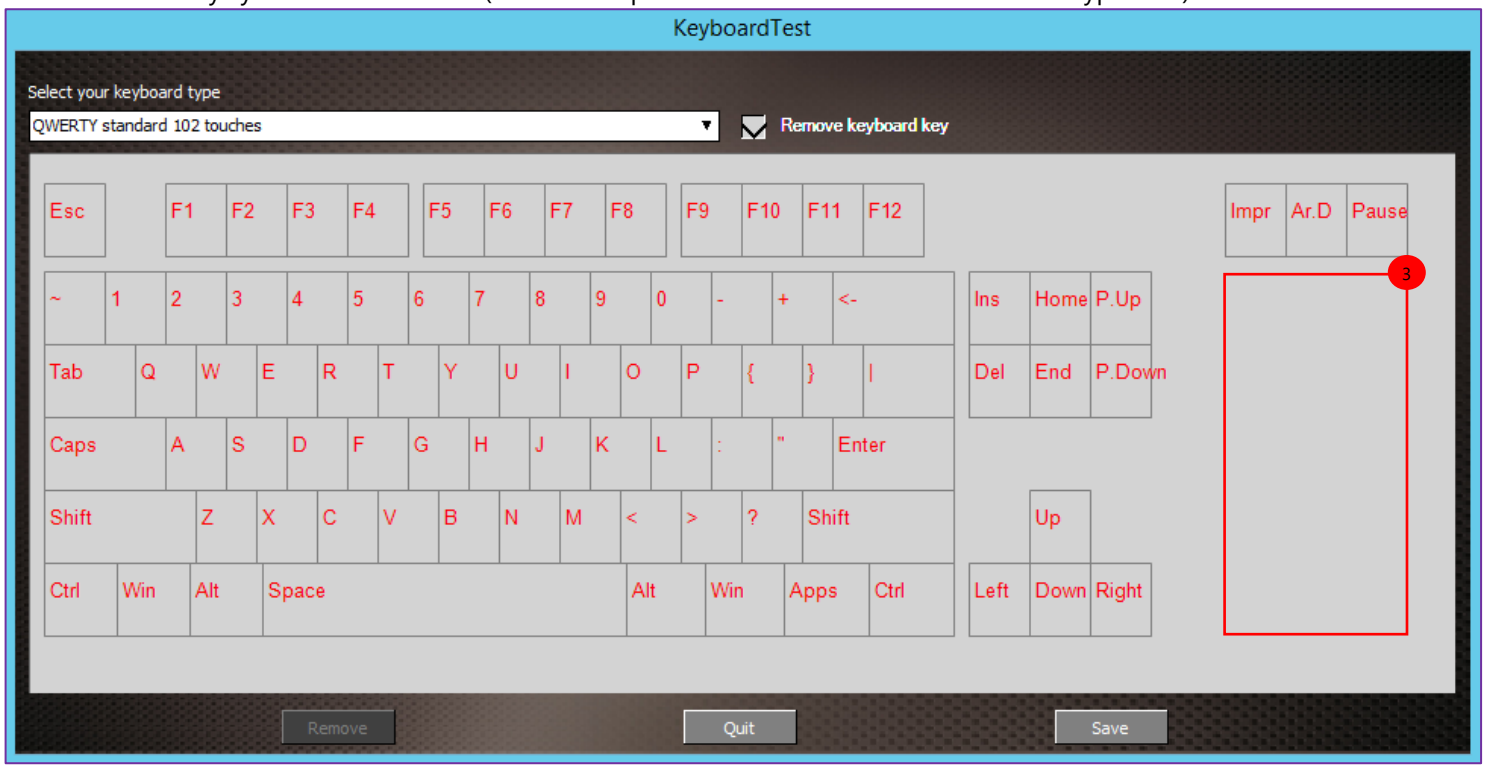
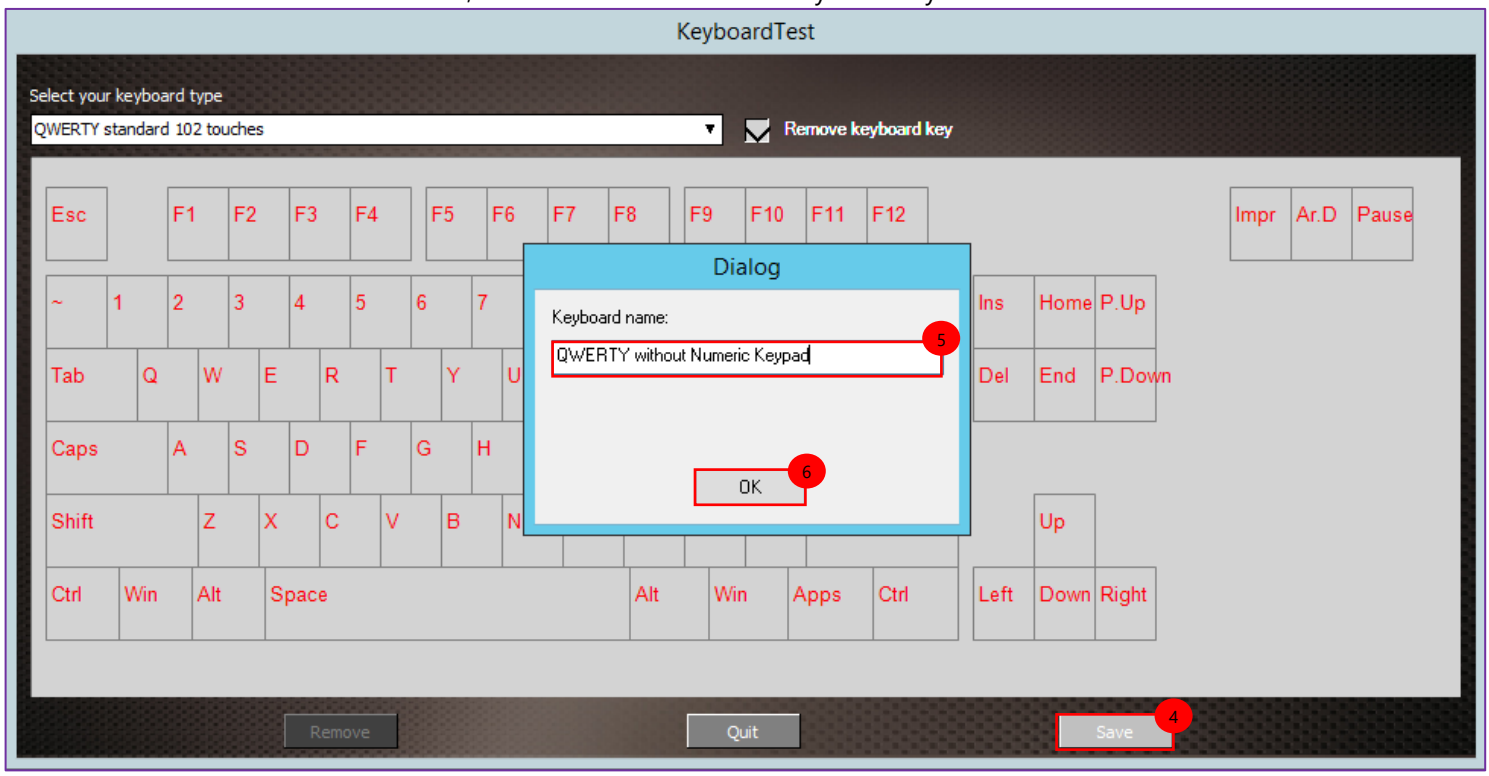
3. Since the pre-defined keyboard layouts contain the maximum number of keys, you will have to click with your mouse on the keys you want to remove (in our example below we removed the Numeric keypad 3):




4. Click on the « Save » button 4, enter a name for this new keyboard layout 5 and click on the OK button 6:

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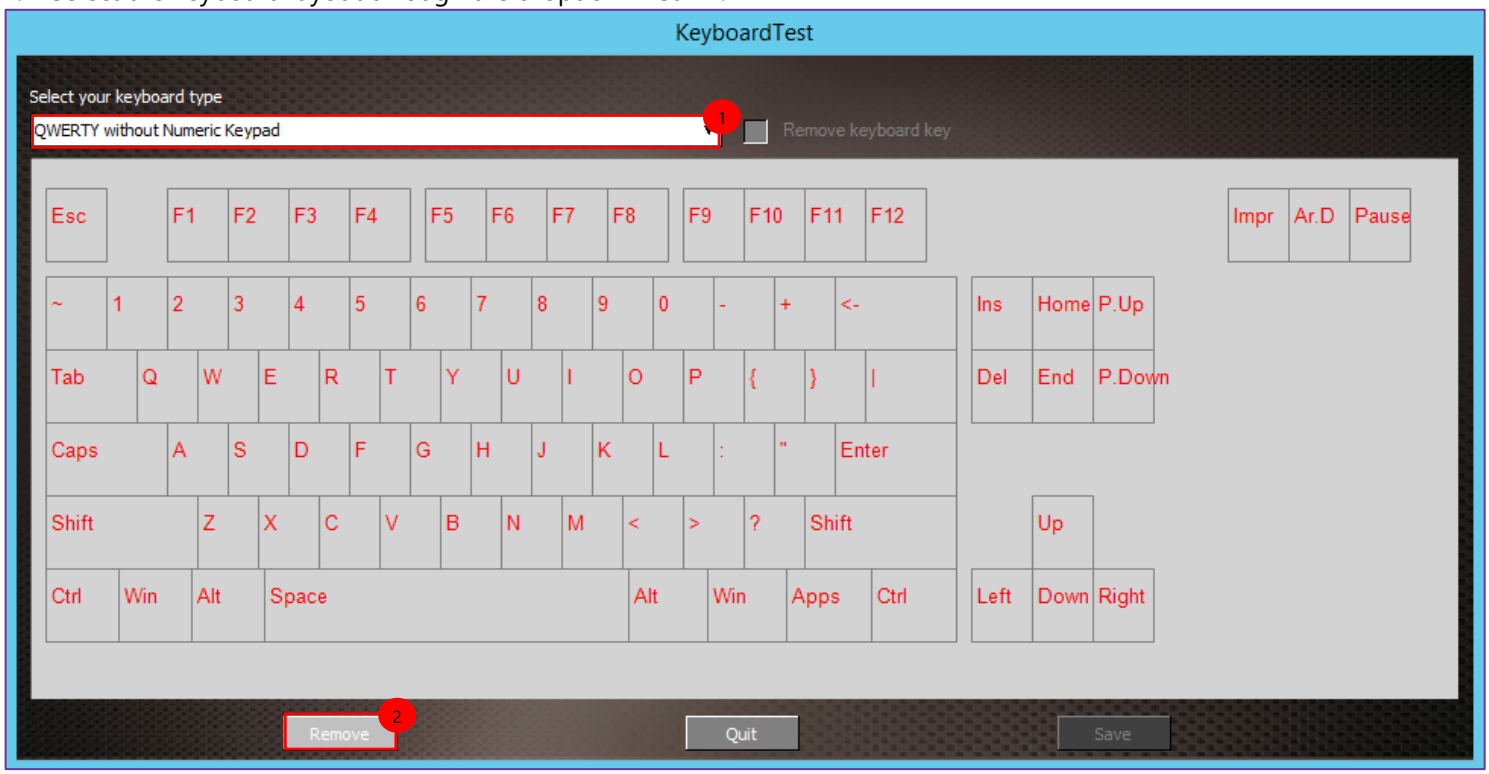
### Removing a keyboard layout

You can remove only a keyboard you added (not the predefined ones).

1. Select the keyboard layout through the dropdown list (1):




2. Click on the “Remove” button (2) at the bottom

### Editing a keyboard layout

You cannot edit directly a keyboard layout you added. You have to remove it and then recreate it as described above.

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# How to setup wipe rack view

You need to adjust the script and configuration files in the following way to activate rack mode view:

1. Adjust SDSShredder module param1 in the script.xml:

```
<Module Id="96" ConfigFile="<NASMAP:.\array_config.ini>" Param1="0x00000422"
Param2="0x00000000" FullScrn="0"></Module>
```

   a) Add 0x400 to the param1 to activate the rack view

   b) Specify the algorithm to use in param2 as for the standard view

2. Adapt the configuration file array_config.ini (located next to deploy_jukebox.exe) to the rack layout:

```
[Config]
; Default configuration file for a 24 ports bay rack to adapt to the rack layout

; Number of rows
Row=4

; Number of columns
Column=6

; Display bay index number in upper left corner
Show_Bay_Index=1

; Method to retrieve SAS address when a disk is connected through a SAS port
; 0 - Diskpart connector path (Connector index X / path PCIROOT(X)#PCI(Y)#SATA(Z))
; 1 – SCSI path (PortNumber:PathID:TargetID:LUN) - LSI SAS2 HBA (92XX)
; 2 – SCSI path (PortNumber:PathID:TargetID:LUN) - LSI SAS3 HBA (93XX)
; 3 – Full level connector PCI address
HBA_Type=0

; File use as background bitmap for each disk bay
BackGround=.\bay_background.bmp

; Connectors path: replace each index value by the real connector / sas disk address
Connectors=1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24
; if HBAR_Type=1 or 2: Connectors=1:0:100:0,1:0:101:0,....,
; To use several connector entries, specify the serial number returned by the command
wmic "SELECT SerialNumber FROM Win32_BIOS"
Connectors_<SerialNumber>= 1,2,3,PCIROOT(0)#PCI(1F02)#SATA(C04T00L00),5,6,7,...
```

   a) Set the number of rows and columns (4 and 6 respectively for a 24 bays rack as below):

| | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
| 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 |
| 19 | 20 | 21 | 22 | 23 | 24 |

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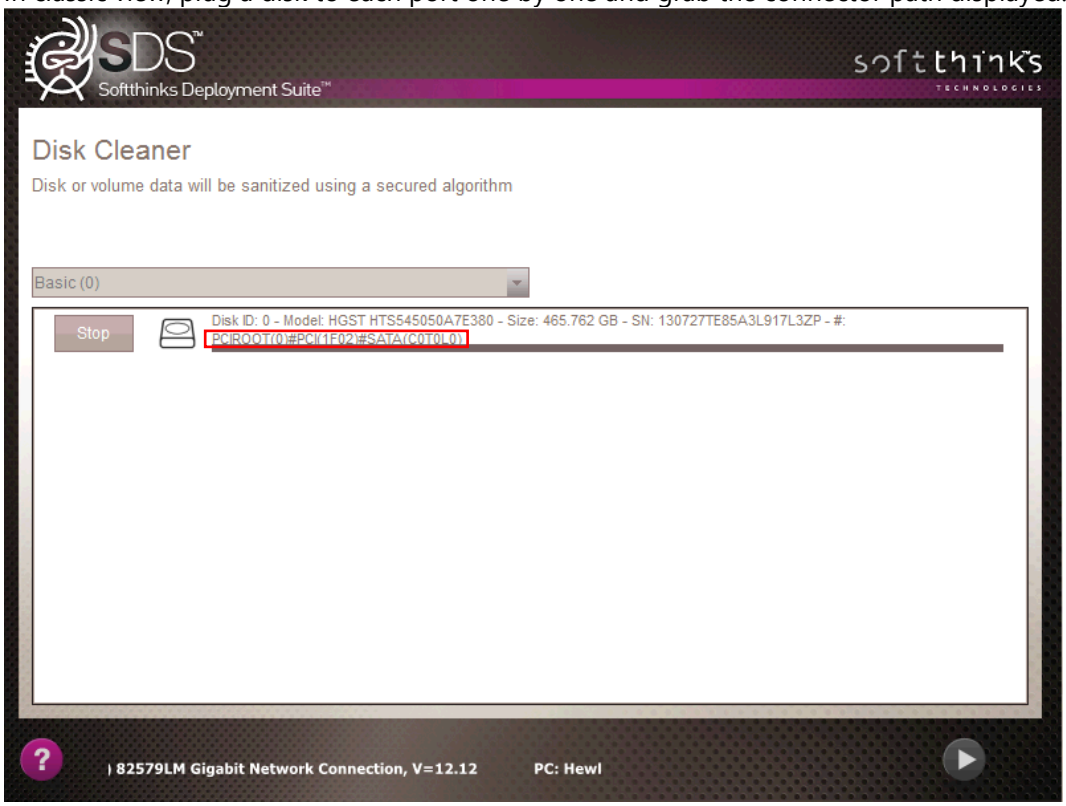
b) Configure the connectors: All connector addresses must be filled manually regarding the hardware or the way you plug connectors. So basicaly you have to find the real connector path or SAS address manually.

1) For non SAS cards, you can grab the connector path from SDSShredder classic view or from Diskpart:

a. In classic view, plug a disk to each port one by one and grab the connector path displayed:




b. With DISKPART DETAIL DISK command, grab the Location Path:

```
X:\WINDOWS\SYSTEM32>DISKPART.EXE

Microsoft Diskpart version x.y.zzzz

Copyright (C) 1992-2018 Microsoft Corporation
On computer: <computer name>

DISKPART> SELECT DISK <DISK NUMBER>>

Disk <DISK NUMBER> is now the selected disk.

DISKPART> DETAIL DISK

HGST HTS54505017E380
Disk ID :
Type    : SATA
Status  : Online
Path    : 1
Target  : 0
LUN ID  : 0
Location Path : PCIROOT(0)#PCI(1F02)#SATA(C0T0L0)
```

Note: *USB disk could not be identified by diskpart or third party tool so you need to start shredder module in classic view mode to retreive connector path*

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2) For SAS cards, you can use a third party tool to dump SAS address. For LSI cards, you can use SAS2 / SAS3 IR Configuration Utility (SAS2IRCU/SAS3IRCU):

```
LSI Corporation SAS2 IR Configuration Utility.
Version 20.00.00.00 (2014.09.18)
Copyright (c) 2008-2014 LSI Corporation. All rights reserved.


         Adapter      Vendor  Device                       SubSys  SubSys
 Index    Type          ID      ID    Pci Address          Ven ID  Dev ID
 -----  ------------  ------  ------  -----------------    ------  ------
   0     SAS2008     1000h    72h   00h:03h:00h:00h      1000h   3020h
SAS2IRCU: Utility Completed Successfully.


LSI Corporation SAS2 IR Configuration Utility.
Version 20.00.00.00 (2014.09.18)
Copyright (c) 2008-2014 LSI Corporation. All rights reserved.

Read configuration has been initiated for controller 0
------------------------------------------------------------------------
Controller information
------------------------------------------------------------------------
  Controller type                         : SAS2008
  BIOS version                            : 7.39.02.00
  Firmware version                        : 20.00.07.00
  Channel description                     : 1 Serial Attached SCSI
  Initiator ID                            : 255
  Maximum physical devices                : 255
  Concurrent commands supported           : 3432
  Slot                                    : 32
  Segment                                 : 0
  Bus                                     : 3
  Device                                  : 0
  Function                                : 0
  RAID Support                            : No
------------------------------------------------------------------------
IR Volume information
------------------------------------------------------------------------
------------------------------------------------------------------------
Physical device information
------------------------------------------------------------------------
Initiator at ID #255

Device is a Hard disk
  Enclosure #                             : 1
  Slot #                                  : 1
  SAS Address                             : 4433221-1-0200-0000
  State                                   : Ready (RDY)
  Size (in MB)/(in sectors)               : 238475/488397167
  Manufacturer                            : ATA
  Model Number                            : WDC WD2500JD-22H
  Firmware Revision                       : 2D08
  Serial No                               : WDWMAL71031724
  GUID                                    : N/A
  Protocol                                : SATA
  Drive Type                              : SATA_HDD
```

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```
Device is a Hard disk
  Enclosure #                             : 1
  Slot #                                  : 4
  SAS Address                             : 4433221-1-0700-0000
  State                                   : Ready (RDY)
  Size (in MB)/(in sectors)               : 1907728/3907027054
  Manufacturer                            : ATA
  Model Number                            : WDC WD20EFRX-68A
  Firmware Revision                       : 0A80
  Serial No                               : WDWMC300243776
  GUID                                    : 50014ee058c98893
  Protocol                                : SATA
  Drive Type                              : SATA_HDD

Device is a Hard disk
  Enclosure #                             : 1
  Slot #                                  : 6
  SAS Address                             : 4433221-1-0500-0000
  State                                   : Ready (RDY)
  Size (in MB)/(in sectors)               : 476940/976773167
  Manufacturer                            : ATA
  Model Number                            : TOSHIBA MK5056GS
  Firmware Revision                       : 3D
  Serial No                               : 21LBTK3HT
  GUID                                    : 5000039311505d92
  Protocol                                : SATA
  Drive Type                              : SATA_HDD
-------------------------------------------------------------------------
Enclosure information
-------------------------------------------------------------------------
  Enclosure#                              : 1
  Logical ID                              : 500605b0:01bd1520
  Numslots                                : 8
  StartSlot                               : 0
-------------------------------------------------------------------------
SAS2IRCU: Command DISPLAY Completed Successfully.
SAS2IRCU: Utility Completed Successfully.
```

Note: *For each SAS disk, DISKPART is not accurate in reporting valid connector path because they were reused once disk is removed or added. We need for this to talk to HBA SAS card to find real SAS address behind HBA chipset*

Here is an example view with mixed disk SATA+USB, you could setup what you need according your hardware. The config file looks like this since there is no HBA SAS card plugged here.

```
Connectors=PCIROOT(0)#PCI(1F02)#SATA(C00T00L00),PCIROOT(0)#PCI(1D00)#USBROOT(0)#USB(1)#USB(3),
3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24
```

With HBA card installed, you need to add the proper SAS address (without dash '-') for each disk bay index separated by comma:

```
Connectors=4433221102000000,4433221107000000,4433221105000000,4,5,6,7,8,9,10,11,12,13,14,15
,16,17,18,19,20,21,22,23,24
```

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# How to setup the auditing module

You need to create a question file and fill properly IDS strings according to the question specified.
The syntax is pretty simple and described below.

Script.xml usage:

```
<Module Id="xxxx" ConfigFile=".\QuestionDefinition.txt" Param1="0x0" Param2="0x0"
FullScrn="0"></Module>
```

param1: 0x1 - Automatically adjusting column size regarding question
param2: N/A

Return Result Code
1 = error
0 = OK

QuestionDefinition.txt syntax:

```
; A question is displayed only if they are not part of conditional choice.
; All questions are displayed in their index order IDS_QUESTION1, then IDS_QUESTION2…
; Question prefixed by ‘;’ in front of the line are commented, and so not displayed
; Questions can contain special characters through XML syntax ('< 5' would become <en-US>&lt;5</en-US>)
; By default, the first answer is selected except if you are forcing it by inserting the index (0
based) of the answer to preselect right after the question (IDS_QUESTION<x>,<preselected index>:…)
; If a question has only one value, it’s an edit control. You can make it read-only by prefixing the
value by the character ‘R’ (IDS_QUESTION<x>:R,<IDS_EDIT_CONTROL_VALUE>)
; If a question has several values, it’s a combo box. You can make it read-only and specify is this
case which is the selected response (IDS_QUESTION<x>:R<y>,<IDS_VALUE_<y>,IDS_VALUE_<z>)
; %CPU% is a special keyword to replace answer on the fly could be one of the followings:
; Generic: CPU, RAM
; SMBIOS Area 0: BIOS_VENDOR, BIOS_DATE, BIOS_SIZE, BIOS_VERSION
; SMBIOS Area 1: SYSTEM_MANUFACTURER, SYSTEM_PRODUCT, SYSTEM_VERSION, SYSTEM_SERIAL, SYSTEM_UUID,
SYSTEM_SKU
; SMBIOS Area 2: BOARD_MANUFACTURER, BOARD_PRODUCT, BOARD_VERSION, BOARD_SERIAL

; Question 1 below is a simple question with 3 choices (3rd one preselected) which doesn’t raise any
other question:
IDS_QUESTION1,2:IDS_VAL1,IDS_VAL2,IDS_VAL3

; Question 2 below is a 3 choices question (3rd one preselected) which raises 2 other questions
(Question3 and Question4) if the 2nd choice (IDS_VAL1) is selected:
IDS_QUESTION2,2:IDS_VAL2,IDS_VAL1=IDS_QUESTION3+IDS_QUESTION4,IDS_VAL3

; Question 3 and 4 below are a 2 choices question (1st one selected) which are displayed only if 2nde
choice has been selected for Question 2. Question 4 is a read-only combo box with 2nd choice selected
IDS_QUESTION3,0:IDS_VAL4 ,IDS_VAL5
IDS_QUESTION4:R1,IDS_VAL6, IDS_VAL7

; Question 5 below is a 2 choices question (2nd one preselected) which raises question 4 under
question 5 when the 1st choice (IDC_VAL1) is selected
IDS_QUESTION5,1:IDS_VAL1=IDS_QUESTION4,IDS_VAL2

; Questions 6 and 7 are edit controls. Question 7 is read-only
IDS_QUESTION6:%CPU%
```

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IDS_QUESTION7:R,%RAM%

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# How to disable automatic deployment when a profile/preset is matching the system

You can either skip the profile dialog by setting the value `ShowProfileDialog` to 0 in the section `[General]` of Deployjb.ini (See DeployJB.ini) or you can prevent to search for profiles in a specific folder by modifying the value `SEARCH_MODE` in the section `[General]` of SDSProfiles.ini (See SDSProfiles.ini).

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# BurnInTest

## BurnInTest Disk Test Suite

This suite contains a number of tests that exercise the mass storage units (hard disk or otherwise) connected to the computer.

These tests can be on the File System (e.g. NTFS disk volume C:) or directly to the physical disk (e.g. physical disk 1, not using a file system like NTFS).

The physical disk test is available on unformatted disks and formatted disks that do not contain Windows installations or paging files.

On WinPE environment, only unformatted disks are supported for the physical disk test.

By default drive C: is used for the hard disk but this can be changed from the Preferences Dialog and up to 50 drives can be selected for simultaneous testing. From this 50 it is possible to select combinations of available floppy disks, hard disks and flash drives.

Drives can be connected via the IDE bus, SATA, eSATA, SCSI, USB, Firewire or any other method supported by Windows.

You can select one of the following test modes or choose to automatically cycle between the patterns. This selection is done in the preferences window. Possible test modes are:

- Default (Cyclic)
- Sequential data pattern (0,1,2...255)
- Random data with random seeking
- High Low frequency data overwrite (10101 then 00001)
- Butterfly seeking
- Binary data pattern 1 (10101010)
- Binary data pattern 2 (01010101)
- Zeros data pattern (00000000)
- Ones data pattern (11111111)
- Random data pattern
- User defined test pattern
- Quick physical drive test
- Physical drive read test

During each test cycle (except Butterfly seeking and Quick physical drive test) a file is created and verified on the disk.

For the physical disk test there is no file system (e.g. NTFS) to write 'visible' files. As such BurnInTest will create 'virtual' files directly to the disk. This will destroy any data on the disk. The physical drive test in general will be much faster than the formatted drive test and provide better results.

The only exception is the Physical drive read test which will only read directly from the physical disk, and hence will not overwrite any data on the disk.

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The size of the file is equal to a certain percentage of the disks capacity and all files are created in the root directory of the drives selected. The default file size is 1.0% of the disk size. For small capacity drives, like floppy disks, there is a minimum file size of 32KB. It is possible to change the default file size percentage from the preferences window.

Each test file is filled with a coded number sequence (a Pattern) that is used to verify the correct operation of the disk when the file is verified (read). Files are created in the free space on the disk until the disk is at least 94%* full (we'll refer to this as the 'full' level). When the disk has reached this limit, all the test files are deleted and the test starts again.
(*) 94% is used on disks that have a swap file or a Windows directory. A limit of 94% is used to ensure that some space is kept for use by other applications (including the windows swap file). On disks that do not have a swap file or a Windows directory, between 99.5% and 100% of the disk will be used.

A number of test modes perform additional testing to that described above. These are described below:
Random data with Random seeking consists of 2 repeating steps, (1) Writing, reading and verifying a test file with random data and (2) Seeking two random locations in the test files and reading or writing data blocks at this location.

(1) BurnInTest generates 7 unique blocks of random data for each disk under test (the block size is determined by the User preferences settings e.g. 16KB). BurnInTest sequentially writes a file using the first block of random data, followed by the second, third , forth, fifth, sixth and seventh and then the first etc, until the file size specified is reached (e.g. 0.1% of the disk size). After writing this test file with the random test data, the data is read sequentially and verified against the test data written.

(2) Following the writing and verifying of each file, the random seek part of the test starts. BurnInTest will select a test file at random (1..n, where n is the number of the test file that has already been written to disk). It will then select a random block within that test file (i.e. an offset into the file of, block number x block size, eg. 10 * 16KB = 160KB). BurnInTest will seek to this position in the test file and take an action. BurnInTest, at random, will either (i) read and verify a block at this position in the file or (ii) write a block at this position in the file. This process is repeated the number of times specified by the user in the disk preferences "seek count" field.

Steps (1) and (2) are repeated until the disk full level is reached. At this point, all the test files written to disk will be deleted and the process will be repeated.

The Random seeking mode is not supported when the Raw disk test mode is selected.

High Low frequency data overwrite works by first writing a file with a high frequency pattern with each byte set to 0xAA (1010 1010 1010 1010...), then overwriting this with a low frequency pattern 0x08 0x42 0x10 0x84 0x21 (1000 0100 0010 0001 0000 1000 0100 0010 0001) and then verifying that the low frequency pattern has been fully and correctly written. Note: This test pattern will write more data than it reads/verifies, this is the reason the MB Written and MB verified shown on the disk test window may not be equal.

Butterfly seeking works by detecting the hard disk geometry (number of cylinders etc) and then seeking between cylinder 0 and cylinder X and back to cylinder 0. This is repeated the user specified 'seek count' times, before X is incremented by 1. This is repeated until the last cylinder on the Volume is reached. The number of operations reported refers to the number of combined Seek/Read operations.

Note: (1) that this test is only supported in Windows XP and above on non-Floppy, non-optical drives.

(2) Performing a seek in many cases does not move the disk driver head, to ensure the disk drive head is moved to the seek position, a small read (of the Sector size) is done at each seek position. Also, incremental offsets of the sector size are used for the 'X ' seek and the return to '0' seek, to ensure that the disk drive cache is overflowed and physical disk seeks consistently occur (once the disk cache has overflowed).

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(3) Disk drive geometry may be faked or translated by hard disks/device drivers and may not be the actual drive geometry.

(4) The Cylinders, track and sector size used are typically logical values provided by the hard disk.

(5) Up to 8 different physical extents per Volume (or Drive letter) are supported in the butterfly seeking test.

(6) As with other disk tests, if a physical disk is partitioned into multiple volumes (drives) and testing is simultaneously carried out on these volumes, the nature of the test will change. In the case of Butterfly seeking, the movement of the physical disk drive head will not reflect butterfly seeking, but something between butterfly seeking and random seeking, as the seeks for volume 1 go from its logical cylinder 0 to X and the seeks for volume 2 go from its logical cylinder 0 to Y are mixed in time.

(7) Some disk drive device drivers do not support the supply of disk geometry information that is needed for this test.

(8) The Raw disk test option does not support the Butterfly seeking test mode and will be skipped. Error reporting may be configured not to report “Butterfly seeking test not supported for this disk” errors. This can be achieved by editing the Error Classifications file (BITErrorClassifications.txt) for Error Number 160 to NONE. For example, changing the line from:

160,"Butterfly seeking test not supported for this disk", INFORMATION,

to

160,"Butterfly seeking test not supported for this disk", NONE,

The default setting is to cycle between the patterns. In this case a new pattern will be selected each time the disk has reached the BurnInTest ‘full’ level. Where the disk drive is a floppy, CD, DVD, or the operating system is Vista (and later) and the user is not running BurnInTest with 'elevated' administrator privileges, then Butterfly seeking will be skipped in the Cyclic testing and a log message reported.

The Quick physical drive test works by writing, reading and verifying virtual test files to the start of the disk, the end of the disk and a random selection in between. This provides for much quicker disk testing.

The Physical disk read test, tests that all sectors on the physical disk can be read. This can be useful for a number of reasons including testing that a disk is the size that it reports it is (we have seen disks and USB Flash Drives that have this issue).

You can chose to log SMART (Self-Monitoring Analysis and Reporting Technology) errors.

Each of the following settings: Slow drive warning threshold, File size, Test pattern and the logging of SMART errors may be configured differently for each disk drive. The disk drive Duty Cycle setting will be used for all drives when the Duty Cycle Override entry is set blank (no value). If a different duty cycle is required for a particular disk drive, a value may be entered in the Duty Cycle Override entry.

The following settings can be configured differently for each drive: Slow drive warning threshold, File size, Test Pattern and Log SMART errors. To use the general disk drive Duty cycle for each disk just set the Duty Cycle override value to blank (no value), otherwise set the required value per disk. If an error is detected in the coded number sequence then the error count is incremented. The numbers of bytes written and read from the disk are displayed in the test window. The addition of these two values is displayed in the main window.

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### BurnInTest Disk Self-Test

The Disk Self-Test (DST) is a set of built-in routines implemented by the vendor to perform failure diagnostics on the disk. The execution of the DST and the retrieval of the test results are defined by the ATA industry standard. Most drives that conform to this standard implements this set of built-in routines.

If the "SMART" option is selected for the disk test, then the DST is run before the standard BurnInTest disk test. If the "-f" command line parameter is also specified, then an extended disk self-test is also run. If the DST is not supported by the disk, a message will be logged and the DST skipped.

Disclaimer: It has been observed that some drives that claim to support the Disk Self-Test (DST) standard do not in fact fully support the specification. Some drives report the percentage progress incorrectly, and some drives report their status incorrectly.

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### BurnInTest CPU test

The CPU test exercises and verifies a wide range of CPU instructions, at user specified loads. The user selectable sub-categories of the CPU test are:

General purpose instructions (x86) Floating Point Unit (FPU) instructions (x87) CPU extension instructions (x86 extensions).

The specific extension instructions may be selected:
MMX, 3DNow!, SSE, SSE2, SSE3, SSE4.1, SSE4.2 and SSE4a.

Prime number test

Maximum heat test

The numbers displayed in the test window for this test represent how many millions of CPU operations have been performed and verified. Each different CPU test is run for half a second. After all tests have been run the cycle count is incremented. The duty cycle and the CPU speed determine how many operations can be processed during the half second period. Note however that if only the Maximum heat test is selected, then the duty cycle is set to 100% and a single cycle is defined to be 1 trillion CPU operations.

By default, a CPU test is run on each CPU core. The number of CPU tests running a particular subcategory is shown in the test window in the "Threads" column.

The number of CPUs (Packages x cores x threads) that can be tested is up to 256 (where supported by the Operating System). That is, CPUs across multiple "processor groups" can be tested (see Note 2 below).

It is possible to raise an error on a user defined CPU temperature threshold being exceeded. It is also possible to automatically stop testing in this scenario.

The sub-categories of this test are described below:

General purpose instructions: This test exercises and verifies correct operation of CPU instructions from the following groups: Integer mathematics (e.g. add, subtract, multiply and divide)
Data transfer instructions (e.g. pushing/popping data to/from the stack)
Bitwise logical instructions (e.g. bitwise and/or/xor) Shift and rotate instructions (e.g. shift data left x number of bits) Logical instructions (e.g. equals)
Control transfer instructions (e.g. jump on x greater than y)
String instructions (eg. copy a text string)

Known and random data sets are used to exercise and verify correct operation. On 32-bit systems, 32-bit data sets are used. On 64-bit systems, 64-bit data sets are used. The random numbers are generated regularly to provide a larger data set, as well as ensure that the CPU caches overflow and that this mechanism is tested.

Floating Point Unit (FPU) instructions:

This test exercises and verifies correct operation of CPU instructions from the following groups:

Floating Point math (e.g. add, subtract, multiply and divide)
Transcendentals (e.g. sine, cosine)
Load constants (e.g. load Pi)

Known and random data sets are used to exercise and verify correct operation. On 32-bit systems, 32-bit floating point data sets are used. On 64-bit systems, 64-bit floating point data sets are used. The random numbers are generated regularly to provide a larger data set, as well as ensure that the CPU caches overflow and that this mechanism is tested.

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Extension instructions (x86 extensions):

This test exercises extensions to the x86 CPU instruction set for a variety of applications, such as multimedia.

!: This test exercises and verifies correct operation of CPU 3DNow! instructions, including a sample of moving 3DNow! registers, adding, subtracting, and multiplying. Known and random data sets are used to exercise and verify correct operation. Data sets are pairs of 32-bit floats (eg. x,y), where x and y are 32-bit floats.

MMX: As above, but for MMX instructions. Instructions include moving MMX registers, adding, subtracting, and multiplying.

Data set: 64-bit data sets are used. SSE : As above, but for SSE instructions. Instructions include moving SSE registers, adding, subtracting, and multiplying.

Data set: groups of 4 x 32-bit floats (e.g. a,b,c,d) where a,b,c and d are 32-bit floats.

SSE2: As for the SSE test, but for SSE2 instructions. Data set: pairs of 64-bit floats (e.g. x,y) where x,y are 64-bit floats.

SSE3: As for the SSE2 test, but for SSE3 instructions. Data set: pairs of 64-bit floats.

SSE4.1: As for the SSE3 test, but for SSE4.1. Instructions include a sample of mov ing registers and multiplication. Data set: pairs of 64-bit integers.

SSE4.2: As for the SSE4.1 test, but for SSE4.2 instructions.  Instructions include CRC helper functions. Data set: pairs of 32-bit integers.

SSE4a: As for the SSE4.1 test, but for SSE4.a instructions.  Instructions include data extraction functions. Data set: pairs of 64-bit unsigned integers.

AES: A test using the AES instructions.

Notes:
1. MMX stand for "Multimedia Extensions".
2. SSE stand for "Streaming SIMD extensions".
3. SIMD stands for "Single Instruction Multiple Data."
4. Tests are only performed if the CPU supports that test. For example, SSE3 tests will only be performed if the CPU supports SSE3.
5. Known and random data sets are used to exercise and verify correct operation
6. The random test data is generated regularly to provide a larger data set, as well as ensure that the CPU caches overflow and that this mechanism is tested.
7. AES stands for Advanced Encryption Standard.

Prime number:

This test exercises and verifies correct operation of CPU through the use of a prime number generation algorithm.

Maximum heat:

Based on PassMark Software testing of a set of CPU algorithms for different systems, a test has been produced that aims to generate the highest CPU temperature possible by BurnInTest. This test is aimed at checking that the cooling system is capable of doing its job with the system CPU under extreme load, especially when the CPU has been overclocked.

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Notes:
(1) Some CPU operation tests are only supported in the 32-bit version of BurnInTest. These are: 3DNow!, MMX, Push/Pop stack operations, Transcendental's and Load constants.
(2) A normal software application only has access to a single "processor group". BurnInTest has been designed to test CPUs across multiple processor groups and hence test more than 64 logical processors. For more information on a "processor groups" see Microsoft's website, an extract is included below:

> "The 64-bit versions of Windows 7 and Windows Server 2008 R2 support more than 64 logical processors on a single computer. This functionality is not available on 32-bit versions of Windows. Systems with more than one physical processor or systems with physical processors that have multiple cores provide the operating system with multiple logical processors. A logical processor is one logical computing engine from the perspective of the operating system, application or driver. A core is one processor unit, which can consist of one or more logical processors. A physical processor can consist of one or more cores. A physical processor is the same as a processor package, a socket, or a CPU.
> Support for systems that have more than 64 logical processors is based on the concept of a processor group, which is a static set of up to 64 logical processors that is treated as a single scheduling entity. Processor groups are numbered starting with 0. Systems with fewer than 64 logical processors always have a single group, Group 0."

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### BurnInTest Memory Test

The Memory test, tests the reliability of the RAM installed in the computer. As BurnInTest runs within windows some of the available RAM is being used by windows and any other applications running. Any memory that is not already in active use will be tested by the Memory test.
The Memory test works by writing a pattern numbers in the RAM, then verifying the numbers read from the RAM match this sequence. The pattern used can change automatically from one cycle to the next.
Possible test patterns are,
1. Sequence (0,1,2...)
2. Binary 1 (10101010...)
3. Binary 2 (01010101...)
4. Zeros (00000000...)
5. Ones (11111111...)
6. Cell adjacency test

The Test pattern may be selected to be one of the above test patterns. Alternatively, the default (Cyclic) setting will cycle through each of the test patterns.
The total amount of free RAM is displayed in the Memory Test Window. Some memory is always left available to avoid Out of Memory Errors, and disk thrashing caused by Windows swapping to disk. The MBs Written and MBs Verified fields on the Memory Test Window are cumulative since the start of the test and can be greater than the size of the installed RAM.
For the Memory test, a cycle is defined to be the number of times the above 3 step sequence is completed. The 'operations' count represents the number of bytes read or written.
It should be noted that not all RAM faults will be detected by this test. This is especially the case if Windows or the Windows cache is using a large proportion of the available RAM. RAM faults may show up as system crashes or disk errors however. RAM fault detection is improved by running a RAM pretest, available with the Standard memory test. See RAM test preferences.
How the tests work:
There are 3 steps that the Sequence, Binary 1, Binary 2, Zeros, and Ones (11111111...) tests goes through. These are:
1/ Memory allocation. The test will dynamically allocate and release memory depending on how much is currently available. The amount that has been allocated and is under test is displayed in the Test Ram field.
2/ Writing the test data from the low address to the high address.
3/ Verifying the test data from the low address to the high address.
The Cell adjacency test aims to find the RAM problem of adjacent memory cells being incorrectly changed when writes occur to a memory cell. A known 8-bit data pattern is written to memory from the high address range to the low address range. Then starting at the low address and testing towards the high address, each byte is checked that it was not altered by an adjacent write in the previous writing of memory and a new 8-bit data pattern is written. A final pass is then made starting at the high address and testing towards the low address, with each byte is checked that it was not altered by an adjacent write in the previous writing of memory.

- ***Standard memory test***

The standard memory is the normal test for testing memory. See the description in the RAM test preferences window for more details.

- ***Torture test (Memory over-allocation & disk swapping test) (BurnInTest Professional only)***

The torture test is a multi-process memory test. Multiple processes are started in their own virtual address space and each process allocates and tests a block of RAM. This avoids the problem of virtual memory fragmentation which the standard test can experience trying to allocate a single large block of RAM. Each process runs asynchronously, so writing and reading of various memory blocks will take place at the same time in different processes. The other advantage over the standard test is the possibility to over-allocate the RAM. (The standard test attempts to prevent this to avoid disk swapping). Over-allocation takes place when more RAM is used by the torture test than is currently available in the system. This then results in Windows disk swapping memory blocks into a paging file on the disk. This continual swapping to and from the disk places a very heavy load on the system. The I/O activity on the disk will increase dramatically but CPU load can actually decrease as more and

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more time is spent waiting for the paging activity to complete. Depending on the level of over-allocation Windows may need to extend the paging file or may even fail as it runs out of available RAM.

- ***Addressing Windows Extension (AWE) memory test (32-bit BurnInTest Professional only)***

The Addressing Windows Extension (AWE) memory test allows a larger area of memory to be tested on 32-bit versions of Windows. It requires some additional administrator user rights. It will also only work in Window XP. See the description in the RAM test preferences window for more details. The advanced memory test is only available in the Professional version of the software.

END OF DOCUMENT

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