



PSP Tool

User's Manual

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1. Introduction

PSP Tool is a multi-purpose application designed for the PlayStation Portable console to perform various general management functions with the console. Initially PSP Tool was designed just for extracting the IPL from the Memory Stick but has since expanded and incorporates many other diagnostics functions.

2. Feature Summary

PSP Tool allows you to do the following:

- Backup and Restore the IdStorage of the PSP.
- Check the IPL injected on the Memory Stick or a file located on the Memory Stick.
- Check, Backup, Restore and change the battery EEPROM serial.
- Connect Memory Stick, Flash 0, Flash 1, Flash 2, Flash 3 and UMD Disc through a USB cable.
- Create a checksum of the IPL injected on the Memory Stick or an IPL located on the Memory Stick.
- Create a variety of different Magic Memory Sticks.
- Erase the entire IPL space of the Memory Stick.
- Extract the IPL injected on the Memory Stick to a file.
- Format the Memory Stick.
- Inject a variety of included IPLs or an IPL from a file to the Memory Stick.

3. Getting Started

a. System Requirements

- USB port and USB cable or a Memory Stick reader (for copying files to and from the console)
- Custom Firmware 2.71 SE-A or higher (excluding 3.71 M33 firmwares) or the mixed 1.50/3.40 kernel ran under Time Machine.
- A correctly formatted Memory Stick with 512MB~ of free space to store the application, temporary files and extracted data. Less space may be required if not all features are utilized ie. Magic Memory Stick Creation.

b. Installation from Internet

1. Download the software from the host site.
2. Once the download is complete using a file explorer utility navigate to the download location.
3. Open the downloaded file using a unzipping utility (such as WinRAR available at <http://www.rarlab.com/>)
4. Copy the PSP directory in the root of the downloaded archive to the root of the Memory Stick and select yes if asked to overwrite any files.
5. Once the installation is complete 'PSP Tool' can be launched under GAME > Memory Stick™ in the PSPs XMB.

4. Controls

The following buttons are used to control PSP Tool:

Button	Function
CROSS	Goes to the menu of the selected item or executes the selected option.
CIRCLE	Returns to the previous menu.
UP/DOWN/LEFT/RIGHT	Navigates through the menus and pages.
SQUARE	Changes the background colour to a random colour.
SQUARE & L Trigger	Toggles between the installed firmware background colours and the background colours stored internally.
SQUARE & R Trigger	Changes the background colour to the selected system background colour.

5. Feature Descriptions

a. USB Connection

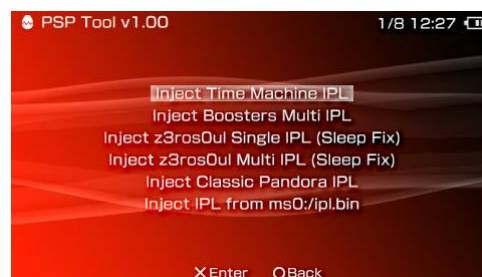
USB Connection is used to connect the device through a USB cable to another device such as a computer. This function can connect the Memory Stick, Flash 0, Flash 1, Flash 2, Flash 3 and the UMD Disc on custom firmwares. If the firmware is being run under Time Machine however only UMD Disc and Memory Stick will be able to be connected through USB and if the installed firmware is too low only the Memory Stick will be able to be connected through USB.



b. Inject IPL to Memory Stick

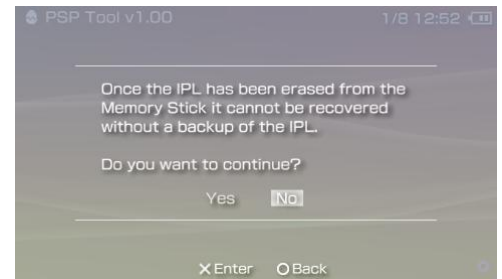
Injecting an IPL to the Memory Stick allows the console to boot with a Pandora battery (battery with the serial set to 0xFFFFFFFF). If no IPL is injected to the Memory Stick or an IPL injected is unable to load a firmware than the PSP will act bricked if a Pandora battery is inserted. The IPL available include:

- Time Machine IPL: This IPL is used for booting the Magic Memory Sticks created by PSP Tool and allows the console to boot the firmware from the NAND with a Pandora battery. However if the firmware installed on the NAND is 3.70 OFW or higher or the firmware is 3.71 M33 or 3.80 M33 you will not be able to boot the NAND firmware using this IPL.
- Boosters Multi IPL: This IPL is similar to the Time Machine and has the same restrictions but is not widely used and has more restrictions as to where an IPL can be loaded from.
- z3ros0ul Single IPL (Sleep Fix)
- z3ros0ul Multi IPL (Sleep Fix)
- Classic Pandora IPL: This was the first Memory Stick IPL released and was used only for booting a 1.50 kernel from the Memory Stick and installed a 1.50 – 2.71 update EBOOT.
- IPL from ms0:/ipl.bin: This option allows you to inject a file stored on the Memory Stick to the reserved IPL sectors.



c. Erase IPL from Memory Stick

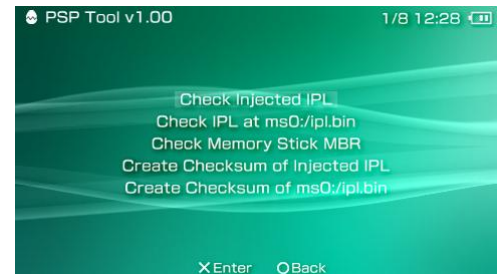
This option will erase the entire reserved IPL space from the Memory Stick and replace it with blank data. Once the IPL has been erased it cannot be recovered so it is important to extract the IPL first, this is essential if the IPL cannot be freely downloaded (such as the Datel PSP Action Replay IPL).



d. Check Memory Stick Information

This menu contains functions to perform the following operations:

- Check Injected IPL: Attempts to identify the IPL injected on the Memory Stick.
- Check IPL at ms0:/ipl.bin: Attempts to identify the IPL called ipl.bin at the root of the Memory Stick.
- Check Memory Stick MBR: Shows various information which is stored in the Master Boot Record of the inserted Memory Stick. This information is similar to what is shown by MSInst.
- Create Checksum of Injected IPL: This option creates a SHA1 checksum of the first 4,096 bytes of the IPL injected on the Memory Stick and saves the checksum to ms0:/checksum.bin. This function is for reporting undetectable IPLs to the author of this software along with the IPL name and the IPL size.
- Create Checksum of ms0:/ipl.bin: This option creates a SHA1 checksum of the first 4,096 bytes of the ipl.bin at the root of the Memory Stick and saves the checksum to ms0:/checksum.bin. This function is for reporting undetectable IPLs to the author of this software along with the IPL name and the IPL size.



e. Extract Memory Stick Data

The options available under this menu allow the injected IPL to be dumped to a file on the Memory Stick.

- Extract Memory Stick IPL: Extracts the injected IPL from the Memory Stick and saves it as ipl.bin at the root of the Memory Stick. This will extract the IPL based on detection of the IPL or if the IPL cannot be detected it will try to guess the IPL size by extracting it in blocks of 4,096 bytes until it reaches a blank block.
- Extract Entire Memory Stick IPL Space: This option will extract the entire reserved IPL space to ipl.bin at the root of the Memory Stick. This option is only needed when the IPL cannot be completely extracted using the above method.



f. Format Memory Stick

This function formats the Memory Stick using the FAT16 file system and relocates where the file system starts by approximately 1MB. This function is similar to the MSPFormat and will allow larger IPLs to be injected to the Memory Stick.



g. Create Magic Memory Stick

The options available here will allow for a variety of different Magic Memory Sticks to be created. Magic Memory Sticks are used to boot the console from the Memory Stick instead of the firmware on the NAND and require a compatible IPL to be injected and the battery serial to be set to 0xFFFFFFFF. If the L Trigger is pressed down towards the end of the creation process the current PSP system registry files will be used for the unbricking process instead of a set of generic 1.50 registry files. To create a Magic Memory Stick one or more update EBOOTS may be required at the root of the Memory Stick and creation will fail if they do not exist. The EBOOT download locations and the Magic Memory Sticks which can be created and their instructions include:



EBOOT version	Download location(s)
1.50 update EBOOT	http://www.mediafire.com/?y3qouzhhn09
3.40 update EBOOT	http://www.mediafire.com/?imzmyntnk2j
3.71 update EBOOT	http://www.mediafire.com/?0t9hmxabb2g
3.80 update EBOOT	http://www.mediafire.com/?egfgpxm1xty
3.90 update EBOOT	http://www.mediafire.com/?yoyphyjyzk2
4.01 update EBOOT	http://www.mediafire.com/?jzwwwvz99q5w
5.00 update EBOOT	http://www.mediafire.com/?0tv3udg1ymb
other EBOOTS	http://raing3.co.cc/other/sony-psp/downloads/

1.50 Update Flasher (Original Pandora)

Requirements	<ul style="list-style-type: none">• 1.50 Official firmware updater EBOOT.• Any PSP-1000 (Fat) console (incompatible with all other PSP consoles).
Method	<ol style="list-style-type: none">1. Rename the 1.50 update file to UPDATE.PBP.2. Copy the 1.50 update file to the root of the Memory Stick.3. Follow the prompts. If the Time Machine IPL is not detected you will be prompted to install the IPL as well as setting the battery serial to 0xFFFFFFFF if it is not already.
Notes	<ul style="list-style-type: none">• Once the create process is complete the updater EBOOT file can be replaced with any updater EBOOT ranging from 1.50 to 2.71.• The installation/unbricking process will install the official version of whichever update EBOOT exists during installation/unbricking.

Despertar del Cementerio v3 (3.71 M33-2)

Requirements	<ul style="list-style-type: none">• 1.50, 3.40 and 3.71 Official firmware updater EBOOTs.• Any PSP-1000 (Fat) or PSP-2000 (Slim) console with a TA-088 or lower motherboard.
Method	<ol style="list-style-type: none">1. Rename the 1.50, 3.40 and 3.71 updater files to 150.PBP, 340.PBP and 371.PBP respectively.2. Copy the 1.50, 3.40 and 3.71 update files to the root of the Memory Stick.3. Follow the prompts. If the Time Machine IPL is not detected you will be prompted to install the IPL as well as setting the battery serial to 0xFFFFFFFF if it is not already.
Notes	<ul style="list-style-type: none">• Once the create process is complete the 1.50 and 3.40 updater files can be removed.• This MMS can install 3.71 M33-2 or 3.71 OFW.• The installed firmware is incompatible with the Time Machine IPL and Boosters Multi IPL.

Despertar del Cementerio v4 (3.80 M33-5)

Requirements	<ul style="list-style-type: none">• 1.50, 3.40 and 3.80 Official firmware updater EBOOTs.• Any PSP-1000 (Fat) or PSP-2000 (Slim) console with a TA-088 or lower motherboard.
Method	<ol style="list-style-type: none">1. Rename the 1.50, 3.40 and 3.80 updater files to 150.PBP, 340.PBP and 380.PBP respectively.2. Copy the 1.50, 3.40 and 3.80 update files to the root of the Memory Stick.3. Follow the prompts. If the Time Machine IPL is not detected you will be prompted to install the IPL as well as setting the battery serial to 0xFFFFFFFF if it is not already.
Notes	<ul style="list-style-type: none">• Once the create process is complete the 1.50 and 3.40 updater files can be removed.• This MMS can install 3.80 M33-5 or 3.80 OFW.• The installed firmware is incompatible with the Time Machine IPL and Boosters Multi IPL.

Despertar del Cementerio v5 (3.90 M33-3)

Requirements	<ul style="list-style-type: none">• 1.50, 3.40 and 3.90 Official firmware updater EBOOTs.• Any PSP-1000 (Fat) or PSP-2000 (Slim) console with a TA-088 or lower motherboard.
Method	<ol style="list-style-type: none">1. Rename the 1.50, 3.40 and 3.80 updater files to 150.PBP, 340.PBP and 390.PBP respectively.2. Copy the 1.50, 3.40 and 3.90 update files to the root of the Memory Stick.3. Follow the prompts. If the Time Machine IPL is not detected you will be prompted to install the IPL as well as setting the battery serial to 0xFFFFFFFF if it is not already.
Notes	<ul style="list-style-type: none">• Once the create process is complete the 1.50 and 3.40 updater files can be removed.• This MMS can install 3.90 M33-3 or 3.90 OFW.

Despertar del Cementerio v7 (4.01 M33-2)

Requirements	<ul style="list-style-type: none">• 4.01 Official firmware updater EBOOTS.• Any PSP-1000 (Fat) or PSP-2000 (Slim) console with a TA-088v2 or lower motherboard.
Method	<ol style="list-style-type: none">1. Rename the 4.01 updater file to 401.PBP.2. Copy the 4.01 update file to the root of the Memory Stick.3. Follow the prompts. If the Time Machine IPL is not detected you will be prompted to install the IPL as well as setting the battery serial to 0xFFFFFFFF if it is not already.
Notes	<ul style="list-style-type: none">• This MMS can install 4.01 M33-2 or 4.01 OFW.

Despertar del Cementerio v8 (5.00 M33-4)

Requirements	<ul style="list-style-type: none">• 5.00 Official firmware updater EBOOTS.• Any PSP-1000 (Fat) or PSP-2000 (Slim) console with a TA-088v2 or lower motherboard.
Method	<ol style="list-style-type: none">1. Rename the 5.00 updater file to 500.PBP.2. Copy the 5.00 update file to the root of the Memory Stick.3. Follow the prompts. If the Time Machine IPL is not detected you will be prompted to install the IPL as well as setting the battery serial to 0xFFFFFFFF if it is not already.
Notes	<ul style="list-style-type: none">• This MMS can install 5.00 M33-4 or 5.00 OFW.

h. Battery Options

The options available here allow for manipulation of the EEPROM stored on the battery. It is important to note that any options which involve writing to the battery EEPROM will not work on consoles which have a TA-085v2 or newer model motherboard. The options include:

- Check Battery Serial: This will retrieve the serial and mode of the battery stored in the EEPROM of the battery.
- Backup Battery EEPROM: Saves the entire EEPROM of the battery to eeprom.bin in the root of the Memory Stick.
- Restore Normal Battery: Restores eeprom.bin in the root of the Memory Stick to the battery EEPROM.
- Restore Battery Serial: Restores just the serial from eeprom.bin in the root of the Memory Stick to the battery EEPROM.
- Convert to Normal Battery: Generates a random serial number and saves it to the EEPROM of the battery. This option prevents the battery from booting in service mode or automatically booting.
- Convert to Service Mode Battery: Sets the battery EEPROM serial to 0xFFFFFFFF which causes the console to boot into Service Mode.
- Convert to AutoBoot Battery: Sets the battery EEPROM serial to 0x00000000 which causes the console to automatically boot from the NAND when the battery is inserted.



i. IdStorage Options

WARNING: Restoring IdStorage keys from another PSP console has the potential of permanently bricking your PSP console or result in loss of almost all function. Invalid IdStorage keys can also cause issues with the PSPs Serial, MAC address, UMD, WLAN and region. The author of this software nor any other developer cannot be held liable for your actions and you agree to use these functions at your own risk knowing that it may be impossible to restore your IdStorage keys once they have been altered. You should also use another application to create a backup of your entire NAND. The only way to recreate an IdStorage is using DC7 or higher which can resolve all IdStorage issues except for MagicGate.

This mode allows for backing up the consoles IdStorage keys to a single file on the Memory Stick. This file can later be restored to fix various issues which may arise due to corruption of the IdStorage keys. This size of this file is also checked to help ensure safety and a checksum is appended to the end of the file to ensure the file was copied correctly to the Memory Stick however the user has the option to override this safety measure.



j. About

The options available here allow you to view various information about the current PSP system and information about the software.

4. Glossary

Many of these terms are thanks to SilverSpring. The original page can be found at:

<http://my.malloc.us/silverspring/psp-glossary/>

Term Name	Definition
Allegrex	The codename of the main CPU of the PSP. The origin of the codename is unknown.
BARYON	The codename of the SYSCON microcontroller IC (refer to SYSCON for more information). The codename refers to a Star Trek term.
Brick	A brick refers to the status of an electronic device that is inoperable due to corruption of one or more of its vital components needed for operation.
CFW (Custom Firmware)	A modified version of the Sony official firmware which removes Sony's security patches to allow homebrew to run and adds extra features to the official firmware.
HIBARI	The codename of the PSP Slim LCD Controller IC. Means 'Skylark' in Japanese (a bird name is also used for the codename of the PSP-1000's (Fat) WLAN firmware: Magpie)
IdStorage	A low-level storage area that holds specific configuration data and Id's for each individual PSP. A basic mapping format is used where a single NAND page is used to store a 'leaf'. Each leaf is assigned a 16-bit leaf Id and mapped to an index. The IdStorage is located in the first megabyte of non-mapped area of the NAND flash. 256KB is reserved on the flash to hold the IdStorage area.
IPL (Initial Program Load)	The bootstrap program that loads the firmware. The IPL is Located in the first megabyte of non-mapped area of the NAND flash. 512KB is reserved on the flash to hold the IPL. If the battery serial is set to 0xFFFFFFFF then the IPL is booted from the Memory Stick instead of the NAND flash.
KIRK	The hardware crypto engine responsible for almost all aspects of the PSP's security, including decryption of EBOOTS & PRXs, save file, ad-hoc encryption and IdStorage verification. The codename refers to Captain Kirk of Star Trek.
LEPTON	The codename of the Mechacon UMD controller IC. A Sony custom-made LSI which holds the optical media DSP & CPU, the ATAPI interface, 480KB DRAM read buffer and at least 384KB of flash ROM for the firmware. The codename refers to a Star Trek term.
Magpie	The codename for the PSP Fat's WLAN firmware (a bird name is also used for the codename of the PSP Slim's LCD Controller IC: 'Hibari' – meaning Skylark.
NAND	Refers to the NAND flash. A type of non-volatile memory similar to an EEPROM which uses NAND Gate cells (as opposed to NOR Flash which uses NOR Gate). On the PSP, a single MCPIC holds both the NAND Flash and DDR SDRAM both of which are 32MB in size (on the Slim PSP both are doubled to 64MB and embedded into the TACHYON main CPU IC). The NAND flash holds the entire PSP firmware as well as the IPL and IdStorage.
POMMEL	The codename of the Power Controller IC. A DC-DC converter controlled by SYSCON. The codename refers to a Star Trek term.
PBP (PSP Boot Package)	The file extension for EBOOTS used to launch programs under the VSH. Holds the ELF executable as well as optional icon/background/sound files to visually display under the VSH.
PRX (PSP Relocatable Executable)	A custom relocatable ELF file used as the executable file format for PSP programs. Typically used as library modules in the PSP firmware. Similar to the IRX (IOP Relocatable Executable) or ERX (EE Relocatable Executable) of the PS2 executable formats.
PSAR (PlayStation Archive)	An archiving file format used to store an image of the PSP's firmware. Used by firmware updaters to update the PSP's firmware.
PSJS (PlayStation JavaScript)	A JavaScript like scripting language used to drive the XMB and its resources.
SPOCK	The hardware crypto engine responsible for raw sector level decryption of UMD's. Named after Captain Spock of Star Trek.
SYSCON	The System Controller microcontroller which handles everything from, controlling power to all devices (including the LCD, UMD drive, Memory Stick, WLAN and the main CPU), keeping the date & time, sleep mode control and controls all external switches including all buttons & the analog nub as well as the headphone remote buttons/switches, LED control, main power & battery control, and even access of the PSP's Service Mode (SYSCON is the chip responsible for detecting the 0xFFFFFFFF serial of the battery to enable service mode).
TACHYON	The codename of the main CPU SoC IC. A Sony custom-made LSI which holds the main CPU (Allegrex), the VFPU coprocessor, the Media Engine, CPU & its embedded DRAM, the Graphics Engine & its embedded DRAM, the AVC decoder, the Virtual Mobile Engine DSP, the KIRK & SPOCK crypto engines and the 4KB embedded mask ROM which holds the PreIPL and routines to boot into service mode. The codename refers to a Star Trek term.
Voyager	The codename of the PSP Slim's WLAN firmware. Named after the Starfleet vessel of Star Trek.
VSH (Visual Shell)	The main interface of the PSP, a user interface shell which provides the access to the kernel. Uses Sony's XMB (Cross Media Bar) for its GUI.
XMB (Cross Media Bar)	The graphical component of the VSH. A script driven GUI first developed for the Sony Japanese PSX DVR (Digital Video Recorder) and also used on Sony WEGA & Bravia TV's as well as the Sony PS3.

5. Support Information

a. Thanks

cory1492: The battery functions are based on his Open Source Pandora Battery Tool.

Dark_AleX: Created the VLF 'VSH Look & Feel' library, Custom Firmware, Time Machine, Despertar del Cementerio and is the PSP developer constantly working to bring us freedom in using our PSPs.

Davee: Helped me get the HEN version.

Hellcat: The Memory Stick format functions used are based on the format functions used in Pandora Installer.

RainMotorsport: Helped me implement and fix issues regarding the dumping of the IPL from the Memory Stick and the features of his application formed the basis of the IPL functions of this application.

Team C+D: The amazing work of each individual of this group was the basis of probably the biggest exploit ever found in the PSP and formed the basis of all of the Pandora software which has in turn led to most PSPs being able to run custom firmware without Sony being able to patch this exploit in any future updates of their firmware.

Torch: Helped me correct issues which caused corruption of the Memory Stick when injecting an IPL larger than the reserved space.

b. Frequently Asked Questions

Q: This software does not create a full dump of my IPL?

A: Use the second dump method to dump the entire IPL space.

Q: The application freezes when I try to use a function or the function does not work?

A: There are a number of plugins which are incompatible with the software and interfere with a number of functions or prevent the software from working at all.

Q: This software does not detect my IPL?

A: The application may not have a definition for the IPL please send the IPL to my e-mail address so I can add detection of the IPL to the next release or send me a checksum of the IPL, the name of the IPL and the original size of the IPL.

Q: Can this application extract the Datel Action Replay IPL from a Memory Stick?

A: Yes it can, the IPL has also been tested with Memory Sticks of different brands and sizes and has been compatible, however the user must still have Official Firmware and a PSP-1000 unit or PSP-2000 unit without a TA-088v3 motherboard and a compatible battery.

Q: The application detects that I have sufficient space to inject an IPL but when I attempt to inject that IPL I get an error saying there is not enough reserved sector space, why?

A: When the IPL is injected it is written in blocks of 4096 bytes and therefore if the IPL size is not a multiple of 4096 it is rounded up. 8192 bytes of blank data are also added to ensure the IPL can be dumped correctly at a later time.

Q: The application keeps corrupting my Memory Stick when I inject an IPL?

A: This issue should not arise due to the reserved IPL space being verified before injecting an IPL however if it does please use MSPFormat to format the Memory Stick and try injecting the IPL again.

Q: The application freezes on load and my console powers off after a few seconds?

A: This application requires a large amount of free RAM and too many plugins in game mode can cause a crash.

A2: Your firmware may not support PSP Tool please update to a custom firmware which is compatible.

Q: I created a Magic Memory Stick, installed the firmware and now my PSP will not boot?

A: DC3 and DC4 Magic Memory Sticks are not compatible with some IPLs including the Time Machine IPL and if the battery serial is set to 0xFFFFFFFF and one of these IPLs are injected onto the Memory Stick the PSP will not boot. To fix this boot the PSP with the battery out using the AC adapter and either change the battery serial, inject a compatible IPL or install a firmware compatible with the IPL.

Q: Before I updated PSP Tool everything worked fine but now errors are appearing or the application crashes?

A: Once of the PRX modules might have been modified but the size of that PRX may not have changed. The PRX files are only overwritten if they are not the same size as the once stored in the EBOOT to increase the life Memory Stick and still make it only necessary to copy one file to the Memory Stick. The simplest way to fix this error is delete the PRX files in ms0:/PSP/GAME/PSP Tool.

A2: There may be an incompatibility with your PSP model, please let me know about this.

Q: The application corrupts my Memory Stick during the format process, how can I fix this?

A: Format the Memory Stick using the default format function in the Sony firmware then after re-copying the program to the Memory Stick try the format function in the application again.

c. Known Problems and Issues

- The following plugins are incompatible with PSP Tool:
RemoteJoyLite: Crashes the system when exiting the software, this is likely caused by USBHostFS.
PSPLink: Crashes the system when exiting the software, this is likely caused by USBHostFS.

d. Warranty Information

This software is provided AS IS. No warranty of any kind is expressed or implied. You use this program at your own risk. The authors will not be liable for data loss, damages, loss of profit or any other kind of loss while using or misusing this software. It is important to carefully read and understand the use of the functions as some functions if used incorrectly can brick the PSP console.

e. Contact Information

If you are experiencing difficulties with any aspect of this software please ensure that you have read and understood the contents of this user manual and attempted re-installing the software before contacting technical support for further help.

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