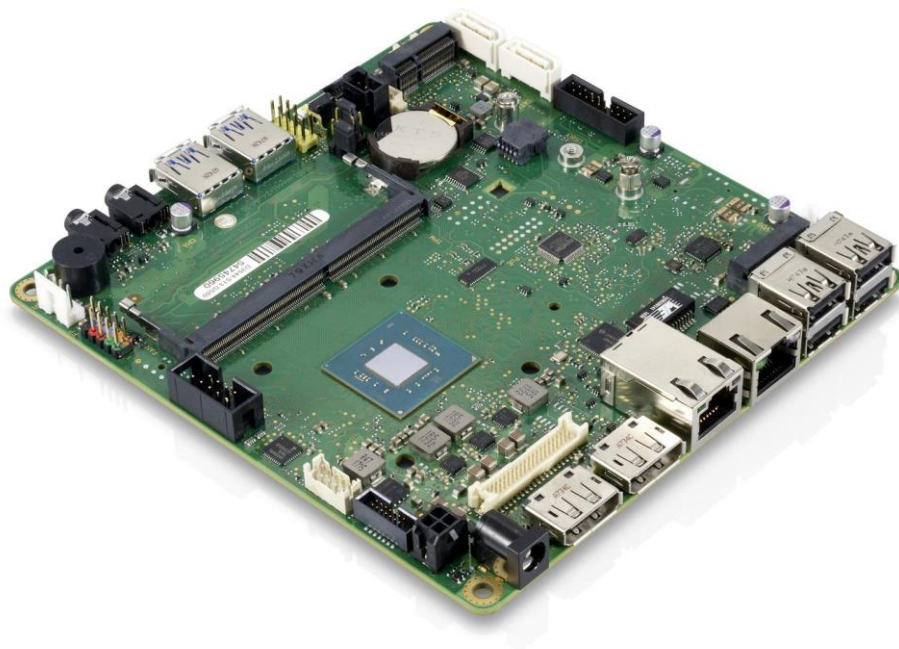


Fujitsu Mainboards

BIOS Flash Tools

"How To" document



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Revision History

Date	Version	Notes
31.08.2018	1.1	Added chapter Deskflash for Windows (CoffeLake) and updated Archive chapter.
22.06.2018	1.0	First released version (some content based on "Efiflash HowTo 1.2")

1 *General Notes and Warnings*

- **Never use third-party (Intel, AMI, ...) tools to update or modify your Fujitsu mainboard's BIOS, it's settings or DMI data!**
Only use Fujitsu provided tools!
- Please always use the newest available version of the flash tools.

2 *Technical background*

- Strictly speaking, all recent (since the D3003/D306x series) Fujitsu mainboards use an UEFI firmware, not a Legacy "BIOS".
Still, since the term BIOS is well established, it is generally used to refer to the UEFI firmware, and both terms are used interchangeably.
- On Legacy BIOS systems, BIOS Setup settings used to be saved in a battery buffered memory region of the main chipset commonly referred to as "CMOS". With UEFI, these Setup settings are saved in the same flash memory chip as the main BIOS, in an area called NVRAM. Thus, on many UEFI systems, clearing the CMOS, for example by removing the CMOS Battery for a while, will not reset the Setup settings. Please refer to the BIOS Recovery procedure description for how to reset the Setup settings on those systems.
- During a BIOS upgrade or downgrade, all BIOS Setup settings, as well as all customizations (like custom boot logo, MS licensing data, ...) are kept. It is not necessary to load setup defaults afterwards.
- In very rare cases it could be necessary to load default values after BIOS flash, e.g. if you have problems after BIOS flash or some internal BIOS settings have changed. They will only take effect after loading BIOS default values manually. If you have customized the BIOS settings with EditCMOS/Biosset, these settings will be loaded.
- You can update the BIOS versions in any sequence. So when going for example from 1.1.0 to 1.3.0, you do not need to flash 1.2.0. before flashing 1.3.0.
- In very rare cases, a new BIOS version might require a certain minimum BIOS version to be present. Occasionally the changes in new BIOS versions are so huge that downgrading to very old BIOS versions is not possible any more. The BIOS Update's description text file will explain such requirements and limitations. The flash tool will give a warning and will not flash the BIOS in such cases.
- After upgrading / downgrading the BIOS, the mainboard **MUST** be restarted before additional BIOS changes or settings can be applied.
EFIFlash / DskFlash / deskflash will automatically issue a reset or power cycle at the end of the flash procedure.
- When downgrading the BIOS, the Intel ME firmware will not be downgraded.
If there already was running a newer ME firmware version it will remain!

3 Supported Operating Systems

There are flash tools for *DOS* (efiflash.exe), *Windows* (dskflash.exe), *Linux* (deskflash) and *EFI shell* (efiflash). All of them offer the following functions:

- Upgrade/downgrade ("flash") the BIOS
- Recover a corrupted BIOS
- Transfer BIOS Setup settings, defaults and other BIOS customizations (Archive)
- Exchange the BIOS Boot Logo
- Read information about which BIOS updates have been done on a mainboard previously

4 Flash file types

In general (except for the recovery files) it is possible to rename the files, both name and extension. The function of the files is embedded in the contents, not dependent on the file name or extension.

File extension	Type	Operating system (tool)	Comment
*.upd	BIOS update file	DOS / Efi shell (EfiFlash.exe / EfiFlash.efi)	Also used for the logo file flash.
*.upc	Compressed UPD file		For use with BIOS update over LAN.
*.arc	Archive file	DOS (EfiFlash.exe)	See chapter "Transferring BIOS Setup settings"
*.dmp	Dump file	EFI shell (EfiFlash.efi)	
*.scd	BIOS config file	EFI shell (EfiFlash.efi)	
*.nvux	BIOS configuration archive	Windows / Linux (DskFlash.exe / deskflash)	
.rom or numbers e.g. ".101"	BIOS recovery file		See chapter "BIOS Recovery"
*.bup	BIOS update file	Windows / Linux (DskFlash.exe / deskflash)	Also used for the logo file flash. Also used for Archive.
*.DFI.exe	Standalone Updater	Windows	

5 Upgrading / Downgrading the BIOS

5.1 Download BIOS package

- Download latest BIOS admin package (*.bup, *.upd, *.rom) from our FTP server:
 - [ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/\[Type\]/\[Dxxx\]/BIOS/\[Variant\]/*.ZIP](ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/[Type]/[Dxxx]/BIOS/[Variant]/*.ZIP)

- Standalone update for Windows is available too:
 - [ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/\[Type\]/\[Dxxx\]/BIOS/\[Variant\]/*.DFI.\\$XE](ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Products/Mainboards/[Type]/[Dxxx]/BIOS/[Variant]/*.DFI.$XE)
 - The tool must be renamed after download: *. \$XE -> *.EXE

5.2 EfiFlash for DOS

5.2.1 Preparing the DOS bootable USB stick

EfiFlash is meant to be used with FreeDOS, but most recent Legacy MS-DOS versions should work fine most of the time.

Note: DOS memory managers like HIMEM or EMM386 might interfere with EfiFlash.

Please use plain DOS without such programs.

- 1) The easiest way to create a DOS bootable USB stick is using this Windows based Tool:
<ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/USB-FreeDOS-Bootstick/>

Caution: All data on the USB stick will be deleted!

- 2) Copy the files from the BIOS admin pack's DOS directory to any directory on the USB stick. You may omit the *.UPC file.
- 3) In case you want to use the USB stick for BIOS recovery, please copy all *,ROM and *.<Number> files into the USB stick root directory.

5.2.2 Flash procedure

Do not restart, turn off or remove power during flash process unless the tool requests any restart action!

To flash the BIOS using the provided batch file:

- 1) Boot DOS from the USB stick
- 2) Run `dosflash.bat`
- 3) Check the BIOS version information shown and start the flash procedure by pressing the "Y" key to confirm.
- 4) Wait until the flash update is completely done. It may take up to a few minutes, in certain cases even without visible progress.

To flash the BIOS manually:

- 1) Boot DOS from the USB stick
- 2) Run `efiflash.exe /AUTO`
- 3) Check the BIOS version information shown and start the flash procedure by pressing the "Y" key to confirm.
- 4) Wait until the flash update is completely done. It may take up to a few minutes, in certain cases even without visible progress.

5.2.3 Command line options

The command line for EfiFlash is: `efiflash.exe filename <options>`.

Here are explanations for the most commonly used EFiFlash command line options:

/?	Display possible options. The possible options will also be shown when calling <code>efiflash.exe</code> without any option.
/AUTO	Automatically chose a file name based on the currently running mainboard. Don't give a file name in the command line. For example on a D3433-S22 GS3 mainboard it would look for a file called D3433-S2.UPD and flash it.
/U	Update only if file contains a newer BIOS version than the one that is currently active.
/D	Update only if file contains a different BIOS version than the one that is currently active.
/Y	This makes EfiFlash not ask for confirmation, but automatically assume an answer "Yes" for all user prompts.
/LAST_CAP_STATUS	Returns Capsule Flash update status from the previous attempt.
/LOG	<p>Displays the history of previous BIOS flash operations, listing the BIOS version used, the type of flash update, and the date/time of these BIOSes' creation. Please note that the date/time when the BIOS was flashed is NOT shown because it is not logged. The type of flash update can be one of the following:</p> <p>TOTAL = This BIOS had been programmed at the Fujitsu factory UPDATE = normal flash update ARCHIVE = Archive flash update</p>
/ARCHIVE	This creates a BIOS archive file (*.arc). Please see the chapter "Transferring BIOS Setup settings, defaults and other BIOS customizations (Archive)" for details.

5.2.4 Errorlevels (Return codes)

Errorlevel	Meaning
0	Terminated normally, everything went OK
1	EfiFlash.exe generated error
2	BIOS generated error
3	Hardware error detected
4	Service not supported
5	File read/write error
6	Error parsing User Options
55	Bios Interface not found (not an Fujitsu mainboard with UEFI firmware)

5.3 EfiFlash for EFI (D36xx and newer)

5.3.1 Preparing the FAT32 USB stick

EfiFlash.efi is a flash image update utility located in the BIOS boot menu (F12). It is available for Fujitsu D354x-Sx and newer mainboard generations.

- 1) Copy content of the BIOS admin package to any USB drive/stick. The files should be visible in following directories:
 - a. EfiFlash.efi -> \EFI\FUJITSU
 - b. BIOS flash update file (*.UPD) in root directory of USB stick.
 - c. Optional: BIOS config file (*.SCD) in root directory of USB stick.

5.3.2 Flash procedure

Do not restart, turn off or remove power during flash process unless the tool requests any restart action!

- 1) Plug the prepared USB stick to any USB port on the target system
- 2) Power on system and hit F12 to open boot menu.
- 3) Choose "FUJITSU Update Utility".
- 4) EfiFlash.EFI initializes flash update process automatically.
- 5) Confirm update or decline it to choose another operation. See "Additional functions".
- 6) Wait until the flash update is completely done. It may take up to a few minutes, in certain cases even without visible progress.

5.3.3 Additional functions

- 1) If another operation was chosen, supported options will be shown.
- 2) Choose desired option by typing corresponding number/letter.

Here are explanations for the additional EFIFlash.efi commands:

1	[DEFAULT] Update flash in automatic mode
2	Create dump file (*.DMP) of installed flash image. Please see the chapter "Transferring BIOS Setup settings, defaults and other BIOS customizations (Archive)" for details.
3	Create dump file (*.DMP) and afterwards update the BIOS flash (same as option 2 + 1)
4	Display system and installed BIOS information
5	Save BIOS config data to .SCD file (replaces /Archive-Dump of older platforms)
6	Restore BIOS config data from .SCD file. No full BIOS-update necessary, (compared to Archive-flash procedure)
7	Restore BIOS config data from .SCD file and afterwards update the BIOS flash (same as option 6 + 1). Replaces Archive-BIOS flash. It is possible to restore your specific BIOS settings and update the BIOS in one step.
8	Returns Capsule Flash update status from the previous attempt.
Q	Quit application

5.4 DskFlash for Windows (D36xx and newer)

Since our CoffeeLake based mainboards (D36xx and newer) we changed our BIOS API interface. Therefore it was necessary to split Deskflash into two versions. Both versions are included in the latest ZIP package. Use dskflash.exe from the root directory. The tool itself will choose the correct sub-version.

- FUNC1 = "old" API / Mainboards
- FUNC2 = For CoffeeLake mainboards and newer.

Some parameters and functionalities differ between the two versions.

This chapter describes the new DskFlash version 6.81 and newer.

5.4.1 Preparing the Windows flash procedure

Extract the files from the BIOS admin pack's WINDOWS directory to any directory on your system.

5.4.2 Flash procedure

Do not restart, turn off or remove power during flash process unless the tool requests any restart action!

To flash the BIOS using the provided batch file:

- 1) Run WinFlash.bat / DeskFlash[32Bit|64Bit]_UPD.bat
- 2) Check the BIOS version information shown and start the flash procedure by pressing the "Y" key to confirm.
- 3) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 4) After BIOS flash preparation is done, the system will restart automatically to perform the flash process during BIOS POST ("BIOS capsule update")

To flash the BIOS using the BIOS instant flash package:

- 1) Run Dxxxx-B/Syy.R1.zz.0.DFI.EXE and follow the instructions.
- 2) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 3) After BIOS flash preparation is done, the system will restart automatically to perform the flash process during BIOS POST ("BIOS capsule update").

To flash the BIOS manually ("AUTO" mode also possible, see parameter /UPD in table below):

- 1) Open command line with administrator rights and navigate to the extracted BIOS admin package WINDOWS folder
- 2) Run `DskFlash.exe /UPD /FRB /WD=<path-to-BUP-file> /O=<filename>`
- 3) Check the message box content and press the OK button.
- 4) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 5) After BIOS flash preparation is done, the system will restart automatically to perform the flash process during BIOS POST ("BIOS capsule update").

5.4.3 Command line options

The command line for DskFlash is: `DskFlash.exe /UPD [Parameters]`

Here are explanations for the most commonly used DskFlash command line options:

/UPD	Update mainboard BIOS. Without the parameter /O it automatically searches for the latest available update file in the tool directory, suitable for the installed mainboard.
/ARC	Save the system configuration data (*.ARCHIVE.NVUX). Please see chapter "Transferring BIOS Setup settings" for details.
/BUPINFO	Display detail information about the provided BIOS update (.BUP) or configuration file (.NVUX)
/WD	Set the current working directory for loading and saving files and for storing the logfile too.
/O	Name the object file or file pattern for loading and saving.
/OV	Allow DeskFlash to overwrite a current BIOS or an existing file. Only needed, if installed BIOS is newer than the BIOS you want to flash. Take care about the BIOS setup option "Allow System Firmware Rollback", too.
/ARB	Allow DeskFlash to reboot the system if required.
/NRB	Suppress required reboot of DeskFlash to perform the reboot on an alternate way.
/FRB	Force DeskFlash to reboot the system after finishing the job.
/S	Hide control dialog and display warning dialog.
/W	Hide warning dialog too.
/LF	Enable logfile output and name the logfile.
/?	Show full help of DskFlash tool
/AST	Show last action status (not documented in the tool help)

5.4.4 Errorlevels (Return codes)

A full list of error codes can be shown with `DskFlash.exe /E`

Errorlevel	Meaning
0	Success
1	Warning
2	General error
4	Syntax error in command line
8	Valid BIOS file missing
64	Insufficient privileges
400	BIOS successfully prepared for POST update action
401	POST update action failed
402	POST update action pending

5.5 DskFlash for Windows (prior to D36xx)

Since our CoffeeLake based mainboards (D36xx and newer) we changed our BIOS API interface. Therefore it was necessary to split Deskflash into two versions. Both versions are included in the latest ZIP package. Use dskflash.exe from the root directory. The tool itself will choose the correct sub-version.

- FUNC1 = "old" API / Mainboards
- FUNC2 = For CoffeeLake mainboards and newer.

Some parameters and functionalities differ between the two versions.

This chapter describes the "old" DskFlash version 6.76.

5.5.1 Preparing the Windows flash procedure

Extract the files from the BIOS admin pack's WINDOWS directory to any directory on your system.

5.5.2 Flash procedure

Do not restart, turn off or remove power during flash process unless the tool requests any restart action!

To flash the BIOS using the provided batch file:

- 1) Run WinFlash.bat / DeskFlash[32Bit|64Bit]_UPD.bat
- 2) Check the BIOS version information shown and start the flash procedure by pressing the "Y" key to confirm.
- 3) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 4) After BIOS flash preparation is done, the system will restart automatically to perform the flash process during BIOS POST ("BIOS capsule update")

To flash the BIOS using the BIOS instant flash package:

- 1) Run Dxxxx-B/Syy.R1.zz.0.DFI.EXE and follow the instructions.
- 2) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 3) After BIOS flash preparation is done, the system will restart automatically to perform the flash process during BIOS POST ("BIOS capsule update").

To flash the BIOS manually ("AUTO" mode also possible, see parameter /UPD in table below):

- 1) Open command line with administrator rights and navigate to the extracted BIOS admin package WINDOWS folder
- 2) Run `DskFlash.exe /UPD /FRB /WD=<path-to-BUP-file> /O=<filename>`
- 3) Check the message box content and press the OK button.
- 4) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 5) After BIOS flash preparation is done, the system will restart automatically to perform the flash process during BIOS POST ("BIOS capsule update").

5.5.3 Command line options

The command line for DskFlash is: `DskFlash.exe /UPD [Parameters]`

Here are explanations for the most commonly used DskFlash command line options:

/UPD	Update mainboard BIOS. Without the parameter /O it automatically searches for the latest available update file in the tool directory, suitable for the installed mainboard.
/AR	Creates an Archive BIOS and NVRAM settings file (*.ARCHIVE.BUP). Please see chapter "Transferring BIOS Setup settings" for details.
/WD	Set the current working directory for loading and saving files and for storing the logfile too.
/O	Name the object file or file pattern for loading and saving.
/OV	Allow DeskFlash to overwrite a current BIOS or an existing file. Only needed, if installed BIOS is newer than the BIOS you want to flash.
/ARB	Allow DeskFlash to reboot the system if required.
/NRB	Suppress required reboot of DeskFlash to perform the reboot on an alternate way.
/FRB	Force DeskFlash to reboot the system after finishing the job.
/S	Hide control dialog and display warning dialog.
/W	Hide warning dialog too.
/LF	Enable logfile output and name the logfile.
/?	Show full help of DskFlash tool
/AST	Show last action status (not documented in the tool help)

5.5.4 Errorlevels (Return codes)

A full list of error codes can be shown with `DskFlash.exe /E`

Errorlevel	Meaning
0	Success
1	Warning
2	General error
4	Syntax error in command line
8	Valid BIOS file missing
64	Insufficient privileges
400	BIOS successfully prepared for POST update action
401	POST update action failed
402	POST update action pending

5.6 deskflash for Linux

5.6.1 Installing Linux driver for deskflash and the tool itself

- 1) Download "Deskflash_V1.xx-00xx_Linux64bit.zip" from the OEM FTP:
 - a. <ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/Deskflash/>
- 2) Extract the package on your Linux system to any user folder.
- 3) There are three packages included:
 - a. `precompiled_drv-xxxx.tar.gz`: Precompiled BIOS driver for RHEL and SLES
 - b. `driver_src-xxxx.tar.gz`: BIOS driver source packages to compile the driver by yourself
 - c. `deskflash-xxxx.rpm`: RPM package of the BIOS flash tool "deskflash"

Installing the precompiled driver on RHEL and SLES distribution:

- 1) Extract the tar.gz package to any location on your Linux system
- 2) Run shell script: `kmp_installer.sh`
- 3) To uninstall the driver: `kmp_installer.sh -u`

Compile the driver sources for any other distribution:

- 1) Extract the tar.gz package to any location on your Linux system
- 2) To compile and install the driver, run: `modules_installer.sh -cbi`
- 3) To show all possible commands of compile script, run: `modules_installer.sh -h`

Install deskflash to your system

- 1) Install the RPM package via package manager. Deskflash will be located in `/opt/deskview/bin`

5.6.2 Flash procedure

Do not restart, turn off or remove power during flash process unless the tool requests any restart action!

To flash the BIOS using the provided shell script file:

- 1) Copy `biosflash.sh` and the `*.BUP` file together in one folder and run `./biosflash.sh`
- 2) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 3) After BIOS flash preparation is successfully done, the system will restart automatically to perform the flash process during BIOS POST ("BIOS capsule update")

To flash the BIOS manually:

- 1) Run `deskflash -arb -d <path-to-BUP-file> -o <filename>`
- 2) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 3) After BIOS flash preparation is done, the system will restart automatically after one minute to perform the flash process during BIOS POST ("BIOS capsule update").

To flash the BIOS in AUTO mode:

- 1) Run `deskflash -arb -at [-d <path-to-BUP-file>]`
 - a. Parameter `-d` not necessary, if `*.BUP` file is stored in the same location as from the tool will be called. Just navigate to the folder containing the BUP file and execute the command above.
- 2) Wait until the flash update preparation is completely done. It may take up to a few minutes, in certain cases even without visible progress.
- 3) After BIOS flash preparation is done, the system will restart automatically after one minute to perform the flash process during BIOS POST ("BIOS capsule update").

5.6.3 Command line options

The command line for deskflash is: `deskflash [Parameters]`

Here are explanations for the most commonly used DskFlash command line options:

-at	Automatically searches for the latest available update file in the active location, suitable for the installed mainboard.
-ar	Creates an Archive BIOS and NVRAM settings file (*.archive.bup). Please see chapter "Transferring BIOS Setup settings" for details
-d	Set the current working directory for loading and saving files and for storing the logfile too.
-o	Name the object file or file pattern for loading and saving.
-ov	Allow deskflash to overwrite a current BIOS or an existing file. Only needed, if installed BIOS is newer than the BIOS you want to flash.
-arb	Allow deskflash to reboot the system if required.
-narb	Suppress required reboot of deskflash to perform the reboot on an alternate way.
-lf	Enable logfile output and name the logfile.
-i	Display system and BIOS information
-h	Show full help of deskflash tool
-ast	Show last action status (not documented in the tool help)

5.6.4 Errorlevels (Return codes)

A full list of error codes can be shown with `deskflash -e`

Errorlevel	Meaning
0	No error
1	General error occurred, check protocol
2	Syntax error in command line
16	Provided file is not valid
64	Missing confirmations (-arb, -ov, -fcu) for action
128	Insufficient privileges for action
129	The BIOS version in the file is not update compatible with the version installed.
130	Downgrading to this BIOS version is prohibited.
140	BIOS successfully prepared for POST update action
141	POST update action failed
142	POST update action pending
240	No support module for this hardware found

6 *Transferring BIOS Setup settings, defaults and other BIOS customizations (Archive)*

The Archive function the flash tools can be used to transfer several customizations from a source mainboard to target mainboards.

This is useful for example for setting up each mainboard during system mass production, instead of applying all customization one by one on each system.

Caution: The BIOS version on the source and destination mainboard must be the same!

If necessary, update the BIOS and reboot before applying an Archive!

The following Items are transferred if they are different from the target mainboard:

- The whole NVRAM
(this contains the BIOS Setup Defaults, current BIOS Setup settings, Boot order, BIOS passwords)
- The BIOS Boot Logo
(created with UEFIModL and applied with any Fujitsu BIOS flash tool)
- Customized fan control and temperature limits data
(created with SilentFanConfig and applied with SMCO)
- Customized EDID data for LVDS attached flat panel displays
(created with Phoenix and applied with LVDS)
- Customized DMI data „System Manufacturer“ = DMI Type 1 Offset 4 and Type 3 Offset 4
(set with OEMIDENT)
- Some parts of the main system BIOS (only for ARC files)

The following Items are **not** transferred

- Customized DMI data except for „System Manufacturer“ (see above)
- Customized flags (set with OEMIDENT, like „TPM disabled“)
- Microsoft SLP and OA Data (Windows activation data, set with OEMIDENT)
- MAC Addresses of the LAN chips (set at factory, not editable)
- Management Engine (ME) Firmware (can only be updated during normal BIOS flash)
- Several other parts of the BIOS like Ethernet controller firmware, flash descriptor, etc. (can only be updated during normal BIOS flash)

6.1 Archive workflow (D36xx and newer)

With our CoffeeLake based mainboards (D36xx) we changed our BIOS API interface. Therefore syntax and some functionalities has been changed.

Creating a BIOS configuration file from a source mainboard

Note: BIOS configuration file is now independent of the mainboard BIOS version. No need to use exactly the same BIOS version to create and apply the configuration file.

- 1) Apply all customizations that you wish to use (Defaults, settings, logo, ...).
- 2) Create a BIOS configuration file. The commands are:

EFI: `efiflash.efi /save (*.SCD)`

Windows: `dskflash /arc (*.NVUX)`

Linux: `deskflash /arc (*.NVUX)`

The created file will be named automatically according to the mainboard version and with DeskFlash additionally to the BIOS version.

Applying a BIOS archive file to a target mainboard

- 1) For EFIFlash.efi
 - a. Move the *.SCD file to the root directory of the EFI-USB Stick and boot the "Fujitsu Update Utility"
 - b. Decline Auto update and go to the "Additional Functions" menu.
 - c. Choose Option "6" to restore the BIOS configuration data
 - d. Optional: You can choose option "7" to update the BIOS version and activate the settings in one step. Therefore you must place the corresponding *.UPD and *.SCD file in the root directory of your USB stick.
- 2) For Deskflash
 - a. For applying the NVUX config file via Deskflash there are some special parameters:

/NVU	Restore the system configuration data from a .nvux file <code>DskFlash /NVU /O=<config.nvux> [/PWD=<password>] [/BOOTORDER]</code>
/NVRAM	Restore only the NVRAM (BIOS setup settings) from a .nvux file <code>DskFlash /NVRAM /O=<config.nvux></code>
/PASSWORDS	Restore only the passwords (BIOS setup settings) from a .nvux file <code>DskFlash /PASSWORDS /O=<config_archive.nvux></code>
/BOOTORDER	Restore only the boot order (BIOS setup settings) from a .nvux file or from combined.bup <code>DskFlash /BOOTORDER /O=<config_archive.nvux></code>

Details and examples can be found in the tool integrated help.

- b. You can also combine a BIOS update file (.bup) and a configuration file (.nvux) to update the system BIOS and activate your settings in one step:

/MAKE	Create a combined archive from a .nvux file and a .bup file DskFlash /MAKE /O=<output_combined.bup> /CINP=<config_archive.nvux> /BINP=<original_bios.bup>
-------	---

Apply the combined image in the same way like flashing a standard BIOS file (see chapter "Upgrading / Downgrading the BIOS").

- 3) If desired, apply other customizations that are specific to each piece of system, like SLP/OA activation data, system serial number, etc.

Note: When later upgrading / downgrading the BIOS, all customizations and settings will be preserved.

6.2 Archive workflow (prior to D36xx)

Creating a BIOS archive file from a source mainboard

Note: Steps 1) and 2) can also be done vice versa.

- 1) If necessary: Upgrade/Downgrade the BIOS to the version you intend to use in mass production, reboot to activate this BIOS version.
- 2) Apply all customizations that you wish to use (Defaults, settings, logo, ...).
- 3) Create a BIOS archive file. The commands are:
 - DOS: `efiflash.exe /archive (*.ARC)`
 - Windows: `dskflash /ar (*.BUP)`
 - Linux: `deskflash /ar (*.BUP)`The created file will be named automatically according to the mainboard version and with DeskFlash additionally to the BIOS version.

Applying a BIOS archive file to a target mainboard

- 1) If necessary: Upgrade/downgrade the BIOS to the same version as was used to create the archive, reboot to activate this BIOS version.
- 2) Apply the BIOS archive in the same way like flashing a standard BIOS file (see chapter "Upgrading / Downgrading the BIOS").
- 3) If desired, apply other customizations that are specific to each piece of system, like SLP/OA activation data, system serial number, etc.

Note: When later upgrading / downgrading the BIOS, all customizations and settings will be preserved.

Caution: Do NOT apply an archive file to a mainboard with a different BIOS version than was used to create the archive! As described above, some parts of the BIOS are not updated during applying an archive, only during normal BIOS update. This could result in the BIOS version shown as the one used to create the BIOS archive, but not all parts of the BIOS would actually match this version.

7 Recovery flash

In case the BIOS update process was interrupted, the contents of the BIOS flash chip might be corrupted. If a small very first part of the BIOS, the boot loader, is undamaged, a recovery procedure can restore the BIOS to normal working order.

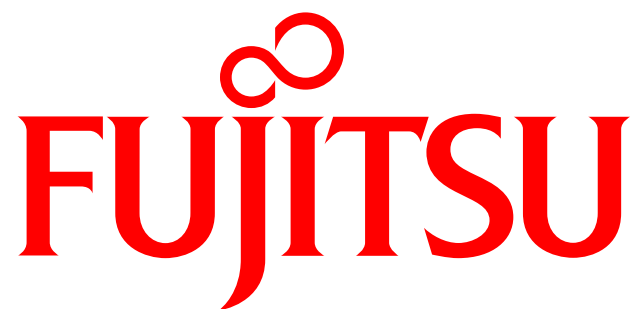
Preparing the recovery procedure

- 1) Copy all appropriate *.ROM and *.<Number> files into the root directory of a FAT32 formatted USB stick.
- 2) Connect the USB stick to any USB port of the affected mainboard.
- 3) Set the Recovery Jumper to the appropriate position.
Please see your mainboard's manual or Tech Notes for the location of this jumper.

Executing the recovery procedure

After switching on the mainboard, the BIOS bootloader automatically initiates recovery and restores the BIOS contents from the ROM file.

There will be no video output, but repeating short beeps every few seconds will indicate that the recovery is running. Depending on the mainboard model and BIOS version either a repeating sequence of short and long beeps or a message on the screen will signal success of the recovery procedure. Remove the power and set the recovery jumper back to its normal position.



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