

Notes on Windows®Embedded Standard

This document shows the notes on using Windows®Embedded Standard of OS-installed model.

⚠ CAUTION

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Windows®Embedded Standard is the OS for embedded uses. This was made by customizing the standard Windows®XP Professional and the OS size became smaller as a result. Rather than customize it according to each customer's requests we customize it according to our assumption which should be better for all customers and offer the OS-installed model so that you can easily introduce Windows®Embedded Standard. Therefore some functions which can work in Windows®XP Professional may not work in Windows®Embedded Standard of OS-installed model. The difference is caused by customizing Windows®Embedded Standard according to our specification. Please accept that such functions are not available in Windows®Embedded Standard of our OS-installed model.

If some functions did not work in Windows®Embedded Standard of OS-installed model, please consult your retailer.

1. Addition of Protocol and Service after the Purchase

Usually the OS should be customized and configured to your requirements, after we check your system configuration, necessary service and devices, various properties, etc.

However Windows®Embedded Standard of OS-installed model was not customized as to customer's system configuration, but customized and constructed based on our best assumptions. In addition, we cannot provide an install CD-ROM for Windows®XP Professional because the license prohibits it.

In conclusion, we can not add services, protocols and other functions which need an install CD-ROM of Windows®XP Professional after the purchase of Windows®Embedded Standard of OS-installed model.

Q1 Which functions are not included in OS-installed model?

A1 We show the example of absent functions as follows. You can not add these functions.

- Defrag
- Recovery of System
- Bluetooth

In addition, you can not use this model as the development PC for any applications. When you develop applications, please prepare on another development PC.

You can add any applications which do not need an install CD of Windows®XP Professional, such as your own applications and the device driver of an I/F board.

Q2 Can users additionally install a printer driver?

A2 Possible.

But printer drivers are not included. So don't select a printer from the printer list shown on printer install wizard.

Please download a driver from printer maker's web site and install it.

You can also change various properties according to your system configuration.

2. Service Pack

The service pack of Windows®XP which we can provide in Windows®Embedded Standard is [SP3]. You cannot install the latest service pack.

3. Enhanced Write Filter Function of Windows®Embedded Standard

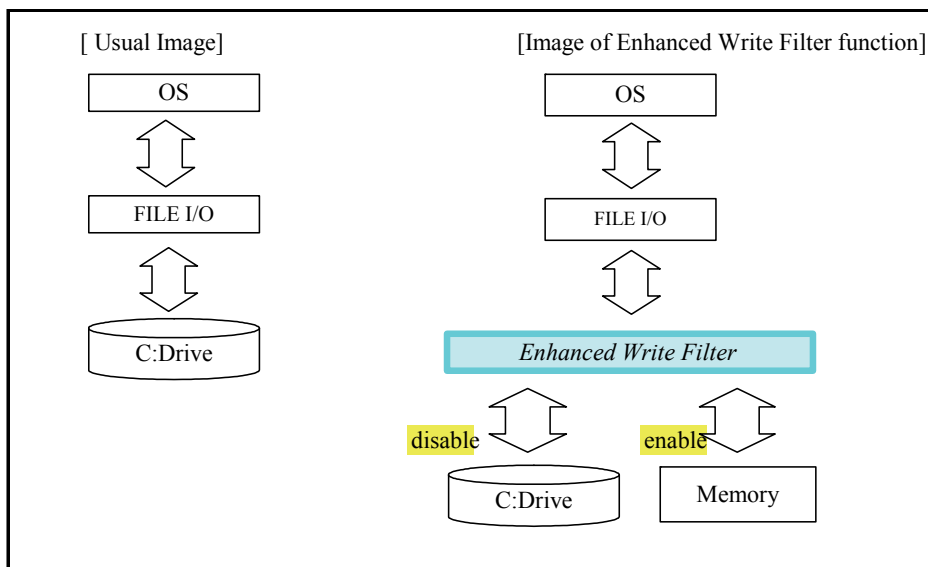
3-1. Introduction

This function can filter writing data to the specified drive and write (redirect) it to a memory. After you enable this function, no data will be physically written to the specified drive (The EWF function is disabled in the factory settings) .

You can enable EWF function only for C: drive of system area.

- ✓ The system will not write any data to the drive with EWF function. If you want to update software, add data and change settings, do it after you disable EWF function. Even if you shutdown the system, data written to memory should not be redirected to a disk.
- ✓ Data written to memory by EWF will be erased after turning the power off.
- ✓ Since the EWF function operates on the operating system, this function will be disabled while the operating system is starting up or shutting down even if the EWF function is enabled. If you turn the power off at this time, Windows may not be started up due to corruption of Windows system files.

When EWF is active, the system will not write any data to the system area. Therefore storage life will be longer.



3-2. How to use EWF function

Console application named EWF manager (ewfmgr.exe) is pre-installed.
Please use it by inputting a command to command prompt.

```

Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Administrator>ewfmgr c:
Protected Volume Configuration
Type          RAM
State         DISABLED
Boot Command  NO_CMD
Param1        0
Param2        0
Persistent Data ""
Volume ID     XX XX XX XX XX XX XX XX XX
Device Name   "\Device\Harddisk\Volume1" [C:]
    
```

Item	Display	Meaning
State	DISABLED	EWF is inactive
	ENABLED	EWF is active
Boot Command	NO_CMD	No changes after the next boot.
	ENABLE	EWF becomes active after the next boot.
	DISABLE	EWF becomes inactive after the next boot.

- (Usage) ewfmgr Drive letter Command means Space.
- Checks EWF status > ewfmgr C:
 - Enables EWF > ewfmgr C: -enable
 - Disabled EWF > ewfmgr C: -disable

If any error messages are shown when using an EWF manager (ewfmgr.exe), please refer to “6. Error messages when using an EWF manager (ewfmgr.exe)”.

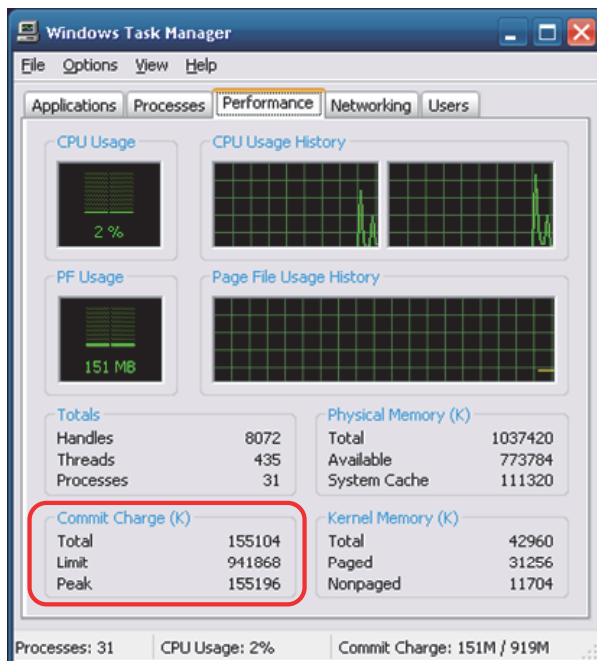
3-3. Notes

EFW adopted in this model (RAM-based EFW) is not suitable for all configurations. Especially, it is unsuitable for “the configuration where much writing requests are thrown to the protected volume”. If you use EFW for such configuration, you have to reboot Windows frequently.

The following description shows the limitation of the specification of the EFW function of our Windows® Embedded Standard. Please read it carefully before using EFW.

Please use the system with EFW so that the total value of commit charge should not exceed the limit. You can use the system continuously till the total value exceeds the limit.

You can check the total value of commit charge and the limit on task manager.



⚠ CAUTION

- For example, the following error message may appear when you use the system under the conditions where the total value of commit charge exceeds the limit.

“Windows - Delayed Write Failed. Windows was unable to save all data for the file... The data has been lost. This error may be caused by a failure of your computer hardware or network connection.”

The cause is that the change to the protected volume by writing is stored in memory and the memory is consumed in relation to the size of written data (the total value of commit charge increases) whenever any writing requests are thrown to the protected volume. The memory is consumed not only when your application writes data but also when Windows writes data (for example, it writes data to event log).

There are no perfect solutions but the following solutions are reasonably effective.

- ✓ Refrain from writing data to the protected volume as much as possible.
- ✓ Change the writing destination of data such as log files to another volume which is not protected (USB memory, network storage and etc.).

Reference information: Microsoft technological information [Document number : 328620]

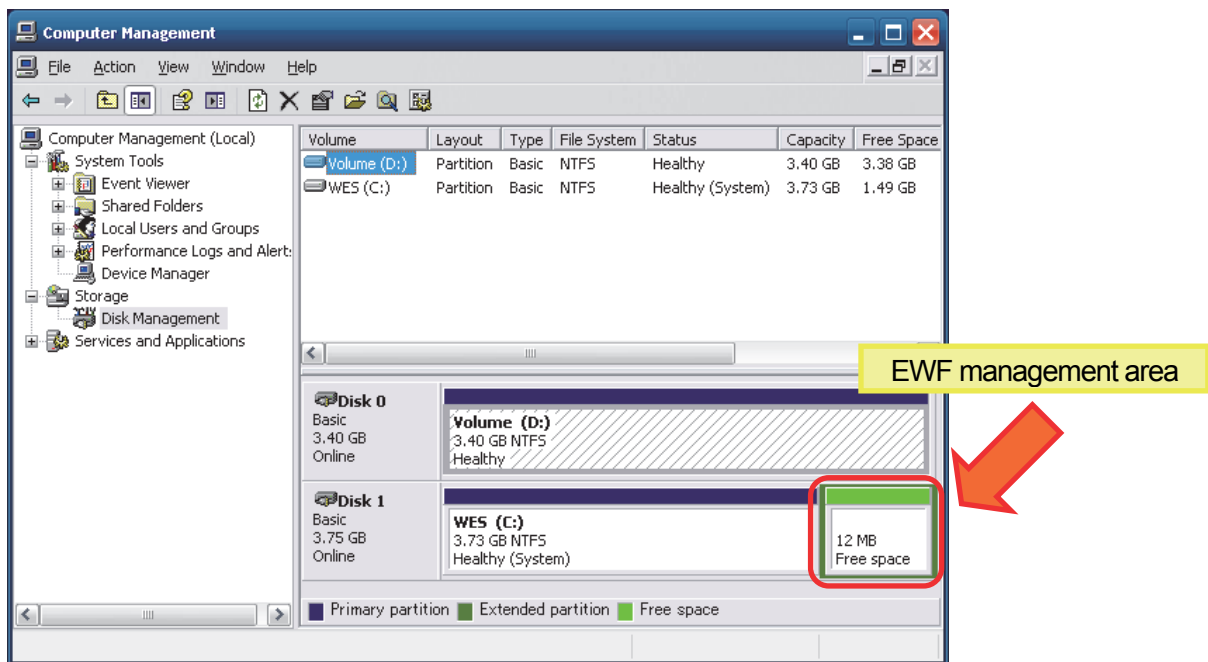
<http://support.microsoft.com/kb/328620/en-us>

3-4. EWF management area

The disk is constructed by the area to which the drive is assigned and blank area.

Several MB is assigned to the blank area. This area has EWF management information.

(The size of the blank area differs depending on your storage).



- ✓ Do not use EWF management area from use applications (also do not assign a drive to it and do not format it).
- ✓ When you want to backup the data on the disk by using a backup tool or other tools, please save EWF management area together.
- ✓ Note that following operations may damage EWF management area.
 - Turns power off without shutdown procedure.
 - Copies data in OS-installed CF card to another CF card.
 - Boots up the system where both built-in SSD and a CF card contain OS.
 - Changes DIP SWITCH on bad timing in recovery procedures that was different from one shown in the document "Recovery Procedure".

(Make sure to rightly follow the procedure shown on the document "Recovery Procedure" when you recovery the system).

If the area was damaged, an error would happen when using EWF function.

When any errors happened, please refer to "6. Error messages when using an EWF manager (ewfmgr.exe)".

4. User Name and Password

On our factory setting, you can log on automatically. But when you should input a user name or a password, please input as follows.

User Name	Administrator
Password	Administrator

5. Limitation

- Action of Applications

Windows®Embedded Standard of OS-installed model does not include some components and services in comparison with Windows®XP Professional and some necessary functions may be missing as described above. As a result, your application may not work because of the lack of components and services in Windows®Embedded Standard. Note that not all the software which Windows®XP Professional supports can work.

- HELP of Windows®Embedded Standard

Different from Windows®XP Professional and others, not all HELP can be shown.

- Addition of Function to OS

The license prohibits us from providing the installation CD-ROM of Windows®XP Professional.

Therefore, after you have purchased the OS-installed model with Windows®Embedded Standard, you cannot add the services, the protocol and other functions which need the installation CD-ROM of Windows®XP Professional.

- Drivers included in Windows®Embedded Standard

Do not make pre-installed drivers inactive or it may function incorrectly.

It does not include all the device drivers contained in the CD of Windows®XP Professional (except for ones related to USB).

“All the device drivers” means that they will require the CD of Windows®XP Professional when you usually install the driver of additional device in Windows®XP Professional and others.

- Windows Update

Windows Update is not available in Windows®Embedded Standard because of the license regulation.

If you want to use security update (QFE *) of Windows®Embedded Standard, please consult your retailer.

*QFE (Quick Fix Engineering) is the modification program temporarily made to solve software problems.

- Shutdown Procedure on Booting up Windows

When you are booting up Windows, do not shut it down. The shutdown procedure may not be done in the correct order.

• Power Off

If you turn the power OFF without performing the shutdown process, the data in the drive is not guaranteed. If you turn the power off while accessing drive even if the EWF function is enabled, Windows may not be started up due to corruption of Windows system files.

6. Error messages when using an EWF manager (ewfmg.exe)

A following message may appear when you execute an EWF manager on the condition where EWF management area does not exist or the area is damaged ^{*1}.

Failed getting protected volume configuration with error 1.

If this error message was shown, please follow the procedure below.

- When using Q10WCPU-W1-E (built-in SSD model)

1. Input this command into a command prompt.

rundll32 ewfdll.dll, ConfigureEwf

^{*2}

2. Reboot the OS.

- When using Q10WCPU-W1-CFE (CF card model)

1. Shutdown the OS.
2. Turn SW-3 ON of DIP SWITCH 1 (built-in SSD becomes inactive).
3. Boot the OS.
4. Input this command into a command prompt

rundll32 ewfdll.dll, ConfigureEwf

^{*2}

5. Reboot the OS. (Do not change the DIP SWITCH).
6. Shutdown the OS.
7. Turn SW-3 OFF of DIP-SWITCH 1 (built-in SSD becomes active).
8. Boot the OS.

If the same error still appears after the procedure above, please refer to “7. When you install OS to other drives than purchase condition”.

*1: For details, please refer to “3-4. EWF management area”.

*2: "ConfigureEwf" is case-sensitive letter.

If other error messages appear, please refer to Microsoft “MSDN Library”.

[http://msdn.microsoft.com/en-us/library/bb521450\(v=WinEmbedded.51\).aspx](http://msdn.microsoft.com/en-us/library/bb521450(v=WinEmbedded.51).aspx) (as of December 2011)

7. When you install OS to other drives than purchase condition

An error may appear when you execute an EWF manager on the condition where you installed OS to a CF card using Q10WCPU-W1-E (built-in SSD model) or you installed OS to built-in SSD using Q10WCPU-W1-CFE (CF card model). Note that the license of OS prohibits the system where both built-in SSD and a CF card include OS.

On above cases, please re-install OS using the recovery media attached to the product and format it according to the procedure below, and then return the system to the purchase condition.

1. If your model is Q10WCPU-W1-E, boot OS from built-in SSD. If your model is Q10WCPU-W1-CFE, boot OS from a CF card.

2. After the OS boot, input this command into a command prompt.

```
diskpart
```

3. After the boot of DiskPart, input commands as follows.

- When formatting a CF card for Q10WCPU-W1-E

```
DISKPART> select disk 1
```

```
DISKPART> clean
```

```
DISKPART> exit
```

After the procedure, set up desirable partitions or format it if necessary, using “Disk Management” or other tools.

- When formatting built-in SSD for Q10WCPU-W1-CFE

```
DISKPART> select disk 0
```

```
DISKPART> clean
```

```
DISKPART> create partition primary
```

```
DISKPART> assign letter=d
```

```
DISKPART> exit
```

After the procedure, you would be requested to format it when selecting D: drive. Format it as NTFS.

4. Reboot the OS.

8. When an EWF function cannot be changed into Disable from Enable

When the mode (Type) of EWF is “RAM(Reg)”, even if it specifies an EWF manager (ewfmgr.exe) “-disable” command, it cannot change into Disable. Please follow the procedure below.

1. Input this command into a command prompt.

```
ewfmgr c: -commitanddisable
```

*1: By rebooting OS after command execution, the data in memory is written in a disk (C drive). When you make write-in data into the minimum, please reboot OS before executing a command.

2. Reboot the OS.
3. Please follow the procedure below.

- When using Q10WCPU-W1-E (built-in SSD model)

- (1) Input this command into a command prompt.

```
rundll32 ewfdll.dll, ConfigureEwf
```

- (2) Reboot the OS.

- When using Q10WCPU-W1-CFE (CF card model)

- (1) Shutdown the OS.
- (2) Turn SW-3 ON of DIP SWITCH 1 (built-in SSD becomes inactive).
- (3) Boot the OS.
- (4) Input this command into a command prompt

```
rundll32 ewfdll.dll, ConfigureEwf
```

- (5) Reboot the OS. (Do not change the DIP SWITCH).
- (6) Shutdown the OS.
- (7) Turn SW-3 OFF of DIP-SWITCH 1 (built-in SSD becomes active).
- (8) Boot the OS.

*2: "ConfigureEwf" is case-sensitive letter.

4. Please execute the following commands from a command prompt and check that the mode (Type) of EWF is “RAM”.

```
ewfmgr c:
```

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\Administrator>ewfmgr c:
Protected Volume Configuration
Type          RAM
State         DISABLED
Boot Command  NO_CMD
Param1        0
Param2        0
```