

ActiveImageTM 2016 R2

PROTECTOR

ActiveImage Protector 2016 R2

Backup and Recovery of UEFI GPT system volume User Guide

Second Edition – June 11, 2020

Copyright Actiphy, Inc. All rights reserved.

The software and the related documentation are proprietary products of Actiphy, Inc., and are copyrighted to the company.

ActiveImage Protector, ActiveImage Protector Server, ActiveImage Protector Desktop, ActiveImage Protector IT Pro, ActiveImage Protector for Hyper-V with SHR, ActiveImage Protector for Hyper-V Enterprise, ReZoom, ActiveImage Protector Linux, ActiveImage Protector Virtual, ActiveImage Protector Cluster, ActiveImage Protector Cloud, ActiveImage Protector Basic, ImageBoot, ImageCenter LE are trademarks of Actiphy, Inc.

Microsoft and Windows are registered trademarks of Microsoft Corporation. Windows Preinstallation Environment and Windows PE are trademarks of Microsoft Corporation.

CONTENTS

Revision History2

1. Summary of Recovery Procedures5

 1.1 Backed up every volume by volume5

 1.2 Backed up system volume alone by volume7

 1.3 System Recovery Procedures9

Introduction

This document is subject to change without prior notice.

No part of this document may be reproduced or altered by any means without prior permission from Actiphy.

Any information included in this document is provided solely on informational purposes and Actiphy shall not be liable for technical or editorial errors or omissions contained herein.

This document provides general descriptions for standard settings using ActiveImage Protector which may not be applicable to a specific system environment or operation. You are solely responsible for the installation, the use, and the operation of the product in your customer's system environment.

This document is intended for system engineers who are engaged in an effort to design and introduce a new system or the system administrators and maintenance staff who are engaged in maintenance and management of the existing system.

The readers of this document are assumed to have prior knowledge and understanding of the Windows operating system, server and domain controller.

This document provides the minimum required information for the operation of ActiveImage Protector. For more detailed information about the operating procedures, please refer to the manuals.

The screen images included in this document provide only examples of the settings but may differ from the actual appearance.

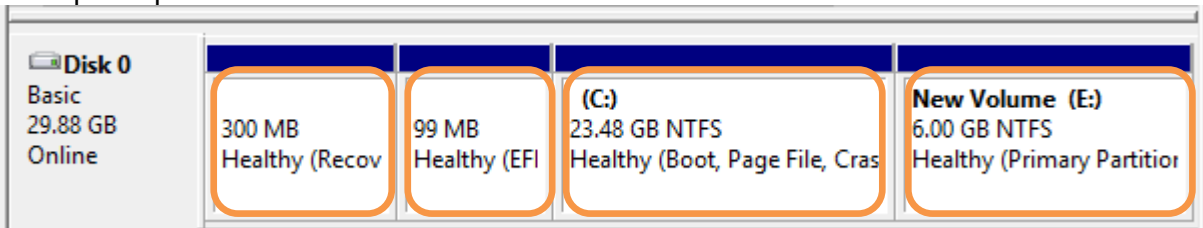
1. Summary of Recovery Procedures

To recover a UEFI GPT system volume, it is recommended to perform backup and restore by disk. Depending on your system environment, you may need to perform a restore by volume, according to the following operating procedures.

1.1 Backed up every volume by volume

While there are many cases when a system recovery is required, this document provides recovery procedures based on the following standard disk configuration.

Example of partition structure



* The volumes boxed in orange are backed up.

Boot up the system to recover from a Linux-based boot environment (product media)

•Normal Recovery

Volume to Volume	Overwrite	<input type="radio"/>
Volume to Volume	Bare metal	<input checked="" type="radio"/>
Disk to Disk	Overwrite	<input type="radio"/>
Disk to Disk	Bare metal	<input type="radio"/>

•Cross Recovery

Volume to Disk	Overwrite	<input type="radio"/>
Volume to Disk	Bare metal	<input type="radio"/>
Disk to Volume	Overwrite	<input type="radio"/>
Disk to Volume	Bare metal	<input checked="" type="radio"/>

Overwrite : Partition structure exists.

Bare metal : Partition structure does not exist.

○ : [Normal Boot] No particular precautions required for recovery / boot procedures.

× : As there is no way for converting to a GPT disk, restored as MBR volume but failed to boot up.

Volume : Every volume is backed by volume.

Disk : Backed up by disk.

Cross recovery: Restore by disk using a backup image created by backup by volume or vice versa.

If working with a Linux-based boot environment, take the following precaution for a bare metal recovery. That is, select the optimum backup and recovery type depending on your system environment before starting a bare metal recovery.

Boot up the system to recover from the WinPE-based boot environment

•Normal Recovery

Volume to Volume	Overwrite	○/△
Volume to Volume	Bare metal	×
Disk to Disk	Overwrite	○
Disk to Disk	Bare metal	○

•Cross Recovery

Volume to Disk	Overwrite	○
Volume to Disk	Bare metal	○
Disk to Volume	Overwrite	○/△
Disk to Volume	Bare metal	×

Overwrite : Partition structure exists.

Bare metal : Partition structure does not exist.

○ : No particular precautions are required for recovery / boot procedures.

○ : Successfully boot up after overwriting recovery of C: drive or data drive alone.

△ : Follow the regular procedures in the overwriting recovery of the EFI partition.

* Overwriting recovery is not required in the recovery for the EFI partition.

× : Recovery process successfully completes but requires the bcdedit command to boot up.

Volume : Every volume is backed up by volume.

Disk : Backed up by disk.

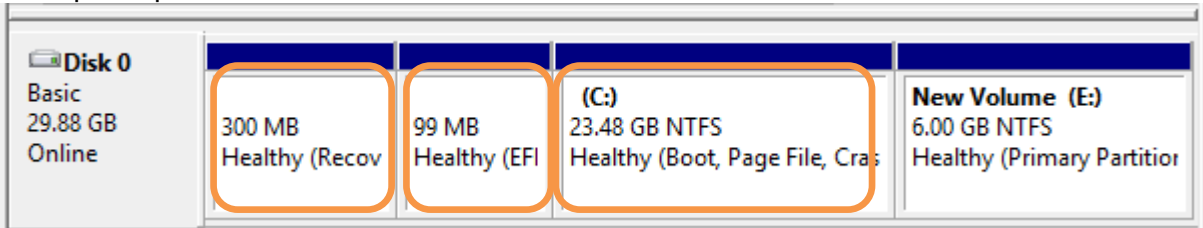
Cross recovery : Restore by disk using a backup image created by backup by volume or vice versa.

If using a WinPE-based boot environment, a result of restore by volume on the disk including the system volume, there may be occurrences that the system does not boot up by regular operation.

By taking solution procedures, the system can boot up. Depending on the situation, it is recommended to take optimum solution procedures.

1.2 Backed up system volume alone by volume

Example of partition structure



* The volumes boxed in orange are backed up.

Boot up the system to recover from a Linux-based boot environment (product media)

• Normal Recovery

Volume to Volume	Overwrite	<input type="radio"/>
Volume to Volume	Bare metal	<input checked="" type="radio"/>
Disk to Disk	Overwrite	<input type="radio"/>
Disk to Disk	Bare metal	<input type="radio"/>

• Cross Recovery

Volume to Disk	Overwrite	<input checked="" type="radio"/>
Volume to Disk	Bare metal	<input checked="" type="radio"/>
Disk to Volume	Overwrite	<input type="radio"/>
Disk to Volume	Bare metal	<input checked="" type="radio"/>

Overwrite : Partition structure exists

Bare metal : Partition structure does not exist

: [Normal Boot] No particular precautions required for recovery / boot procedures.

¹ : Exit: Recovery process failed with -231 error

² : As there is no way for converting to a GPT disk, restored as MBR volume but failed to boot up.

Volume : Every volume is backed by volume.

Disk : Backed up by disk

Cross recovery: Restore by disk using a backup image created by backup by volume or vice versa.

If working with a Linux-based boot environment, take the following precaution for a bare metal recovery. That is, select the optimum backup and recovery type depending on your system environment before starting a bare metal recovery.

Boot up the system to recover from a WinPE-based boot environment

•Normal Recovery

Volume to Volume	Overwrite	○/△
Volume to Volume	Bare metal	×
Disk to Disk	Overwrite	○
Disk to Disk	Bare metal	○

•Cross Recovery

Volume to Disk	Overwrite	○
Volume to Disk	Bare metal	○
Disk to Volume	Overwrite	○/△
Disk to Volume	Bare metal	×

Overwrite : Partition structure exists.

Bare metal : Partition structure does not exist.

○ : No particular precautions required for recovery / boot procedures.

○ : Successfully boot up after overwriting recovery of C: drive or data drive alone.

△ : Follow the regular procedures in case of overwriting recovery of EFI partition.

*Overwriting recovery is not required in case of recovery of EFI partition.

× : Recovery process successfully completed but failed to boot up with STOP error 225

*The use of the bcdedit command enabled the boot up.

Volume : Every volume is backed by volume.

Disk : Backed up by disk.

Cross recovery : Restore by disk using a backup image created by backup by volume or vice versa.

If using a WinPE-based boot environment, a result of restore by volume on the disk including the system volume, there may be occurrences that the system does not boot up by regular operation.

By taking solution procedures, the system can boot up. Depending on the situation, it is recommended to take optimum solution procedures..

1.3 System Recovery Procedures

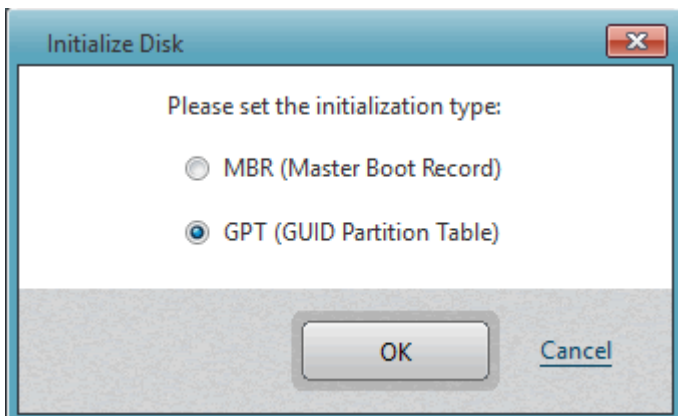
In a Linux-based boot environment (product media), depending on the backed-up volume, recovery process may fail. If “o” is indicated in the table, regular procedures can recover the system volume. For more detailed operating procedures, please refer to [ActiveImage Protector on-line Help](#).

WinPE-based [Volume to Volume bare metal] and [Disk to Volume bare metal] Recovery procedures

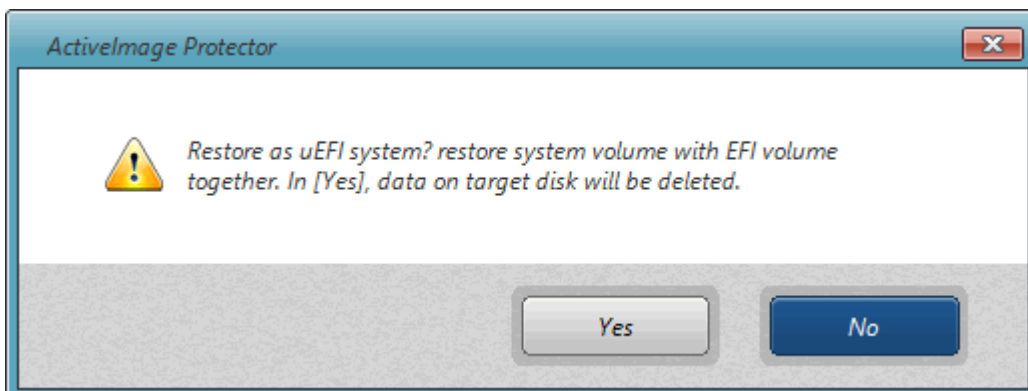
1. Boot up from the WinPE-based boot environment
 - * The operating procedures of the recovery process up to Restore Target settings are the same as the regular operations.
2. Restore Target settings



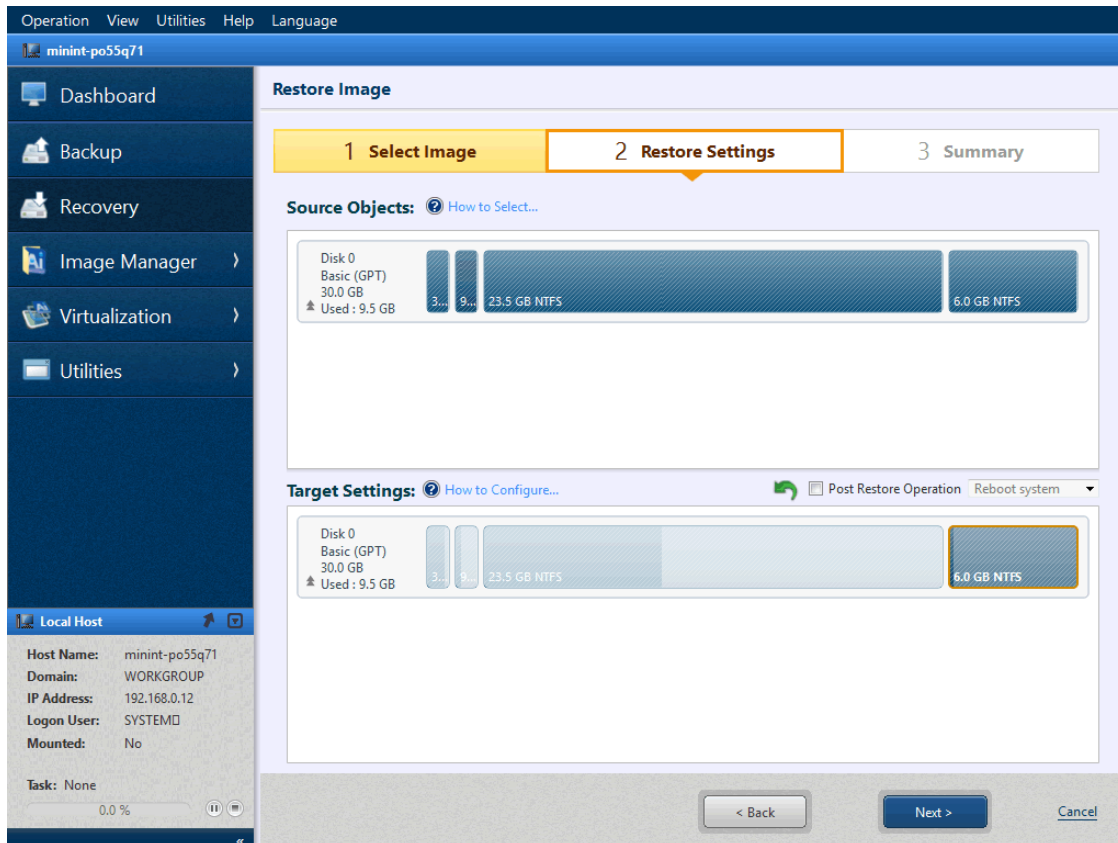
If the restore target disk is a bare metal disk, first, initialize the disk. Right-click on disk information on the disk then select [Initialize Disk] in the context menu.



Please select the disk initialization type [GPT] in the dialog.

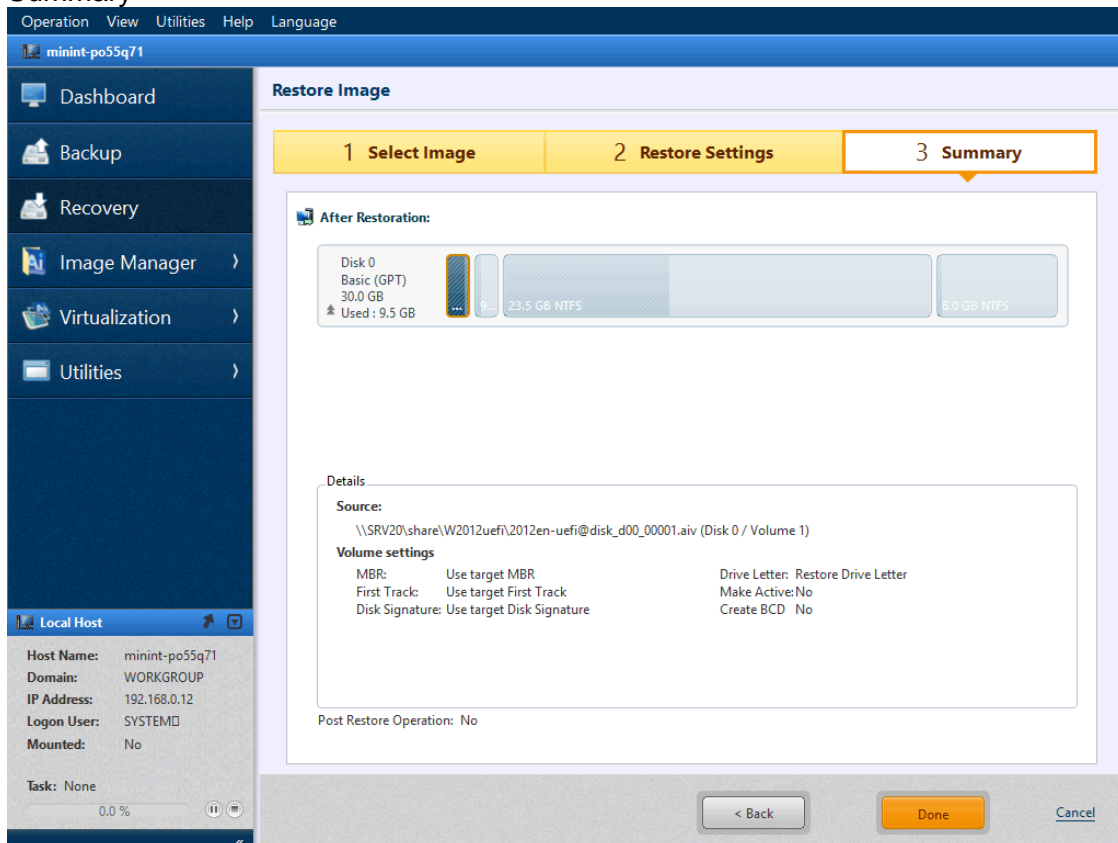


Drag the partition to restore, EFI system partition. If you drag the C: drive, the above message is displayed. Click [No].



Drag every volume to restore and click [Next].

3. Summary



Review the restore source image and click [Done] to start the restore task.

4. Restart the Boot Environment
When the restore task successfully completes, exit the AIP boot environment and shut down or restart AIP boot environment.
5. Start WinPE-based Boot Environment
Restart WinPE-based boot environment.
6. Run the bcdedit command
Run the bcdedit command from [Utility] – [Command Prompt] and check boot loader.

```
Windows Boot Loader
-----
identifier        {default}
device           unknown
path              ¥Windows¥system32¥winload.efi
description       Windows Server 2012 R2
locale            ja-JP
inherit           {bootloadersettings}
recoverysequence  {1e7b9843-c73f-11e6-aeb4-e1eb10f1a5dc}
recoveryenabled   Yes
isolatedcontext   Yes
allowedinmemorysettings 0x15000075
osdevice        unknown
systemroot        ¥Windows
resumeobject      {1e7b9841-c73f-11e6-aeb4-e1eb10f1a5dc}
nx                OptOut
```

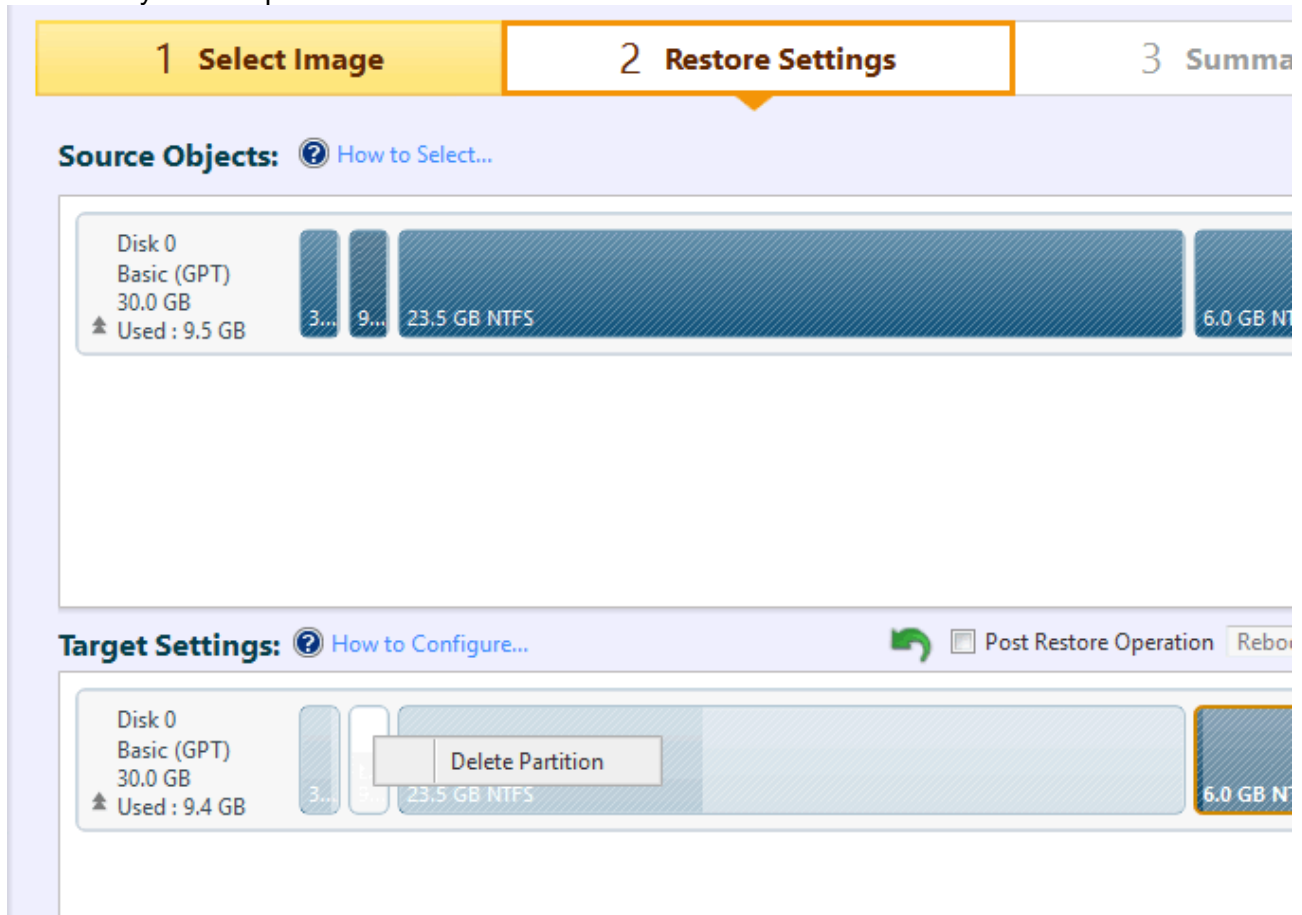
Since the items indicated in red are “unknown”, the OS does not boot up.
Run the following command to correct the settings.

```
bcdedit /set {default} device partition=C:
bcdedit /set {default} osdevice partition=C:
```

[Volume to Volume Overwriting] [Disk to Volume Overwriting] **WinPE-based** recovery operations

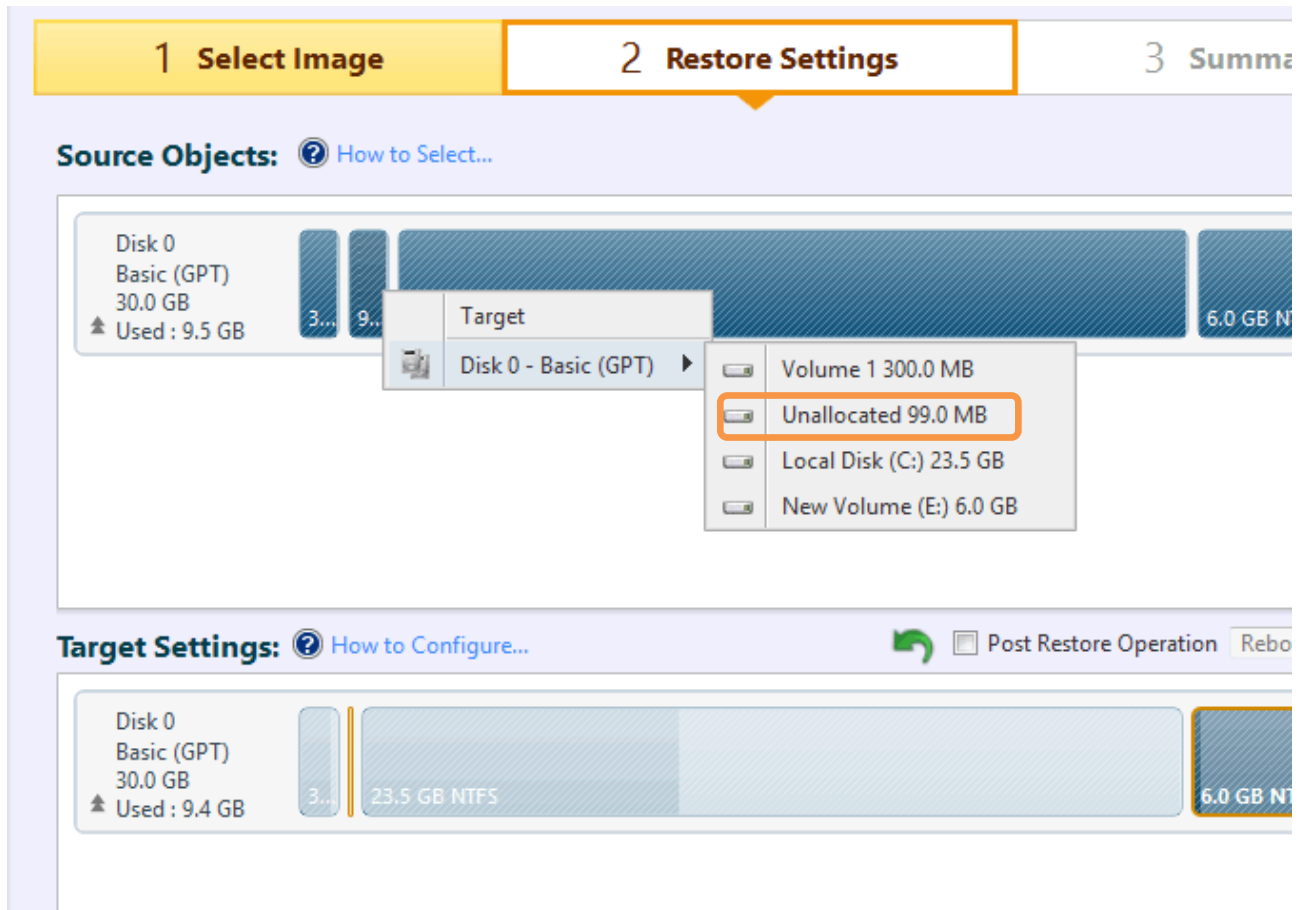
Overwriting recovery is not required in the recovery of an EFI partition. If overwriting recovery of EFI partition is necessary, the following operating procedures are required.

1. Boot the WinPE-based boot environment.
* The operating procedures of the recovery process up to Restore Target settings are the same as the regular operations.
2. Delete only the EFI partition.



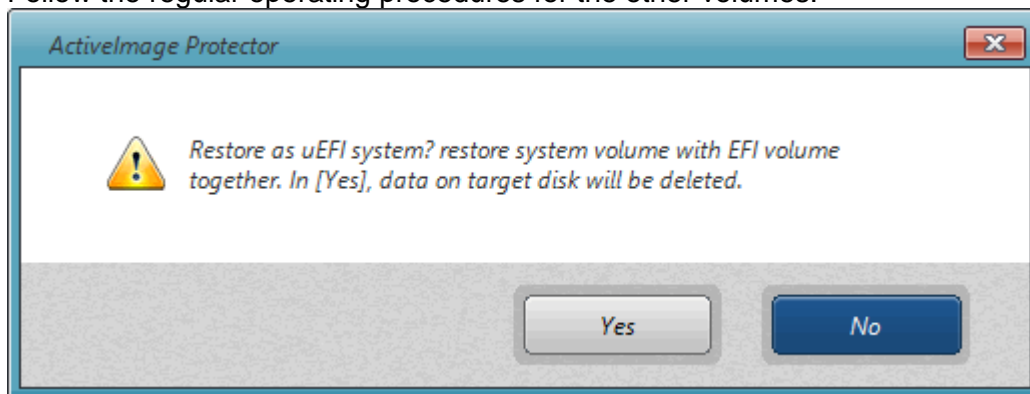
Select and right-click on EFI partition in Restore Target settings and delete the partition.

3. Specify EFI partition



When the EFI partition is deleted, the frame is shown too small to drag the EFI partition to restore. If this is encountered, right-click on the EFI partition to restore and select the unallocated 99MB space.

- 4. Follow the regular operating procedures for the other volumes.



If you drag the C: drive, the above dialog is displayed. Click [No] to proceed with the recovery.