ActiveImage 2018 ™

PROTECTOR

ActiveImage Protector 2018 for Express5800/ft Server

Backup and Recovery of Windows system

User Guide

4th Edition − October 20, 2020

About this document

This document provides the description about the standard backup / recovery operating procedures using ActiveImage Protector 2018 for Express5800/ft Server. This document does not guarantee problem-free operating procedures of backing up /restoring system data. The contents of this document are subject to change without notice.

CONTENTS

1. Preparation

ActiveImage Protector provides online / offline backup features to protect Express5800/ft Server (hereinafter "ft Server") environments.
For the latest information about the supported models, please visit Actiphy's Web site.

In the event of a failure of ft server, the use of ActiveImage Protector's Bare Metal Recovery feature restores the system back to the point-in-time a backup was taken.
Before staring Bare Metal Recovery, please prepare for a temporary boot environment.

Two types of boot environments are provided:
　　·Linux CentOS-based boot environment
　　　Linux-based boot environment is downloadable from Actiphy's Web site.
　　　The non-free media kit includes Linux-based boot environment
　　　Cold backup can be performed in the boot environment.

　　·Windows PE-based boot environment
　　　ActiveImage Protector provides Boot Environment Builder.
　　　Please make sure Microsoft Windows ADK is installed.

2. Back up Express5800/ft Server

For the procedures how to hot back up the system and data on live ft Server and cold back up static ft Server.

This chapter provides description of operating procedures how to back up and save the created backup files in network shared drive as shown in Fig. 1.
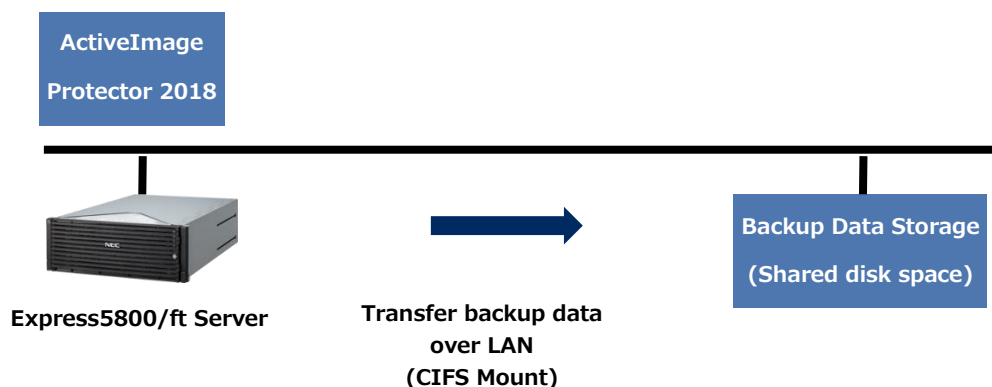

Fig. 1

2-1 Online Backup

For the procedures how to set up ActiveImage Protector 2018 for Express5800/ft Server and online-back up system disk and data disk in Express5800/ R320e, R320f, R320g on Windows, please refer to User Guide in the product media.

Notes:
- Please keep in mind that backup by disk has to be performed to create backup image files.
- To back up volumes configured on dynamic disk, please execute backup by volume.
- Cold backup of volumes configured as dynamic disk is not supported. Only online backup of Windows environment is supported.
- For the limitations to online backup, please refer to the documents included in the product media.

2-2 Cold Backup

This chapter contains descriptions about the operating procedures how to cold back up system disk and data disk in Express5800/R320e, R320f, R320g on Linux-based boot environment.

Notes:

- Before booting up ActiveImage Protector Boot Environment (AIP BE) on Model R320e/R320f, please change BOOT Mode to Legacy, XHCI Mode to Disabled and OS Boot Monitoring to Disabled (for more detailed operating procedures, please refer to [Chapter 1 Installing Operating System] in Installation Guide (Windows)).

- Before booting up ActiveImage Protector Boot Environment (AIP BE) on Model R320g, please change OS Boot Monitoring to Disabled (for more detailed operating procedures, please refer to [Chapter 1 Installing Operating System] in Installation Guide (Windows)).

- With RDX drive connected to the system, if ActiveImage Protector Boot Environment (AIP BE) is booted, the file system on RDX is automatically mounted as "/mnt/<Disk number>_<Volume number>".

- Please make sure that your computer is powered off before starting Boot Environment provided with ActiveImage Protector 2018 for Express5800/ft Server. After setting every backup source disks in the slot of CPU/IO module 0, please plug off the power cord from the power outlet and remove hard disk from CPU/IO module 1.

- The use of Boot Environment may delete dual disk configuration by RDR utility. In this case, you need to set dual disk configuration by using RDR utility again after Windows operating system is started. For Express5800/R320e, R320f, R320g, please refer to [Chapter 1 Windows Installation] - [3.10 Set Dual Disk Configuration] in Installation Guide (Windows Version) to set dual disk configuration by using RDR utility.

- Please keep in mind that you need to run backup by disk to create backup image.

- Cold backup of volumes configured as dynamic disk is not supported. Only online backup on Windows environment is supported.

- A list may not be displayed after running Mount (network) utility on Linux-based boot environment. If you get this problem, run mount command from the terminal.
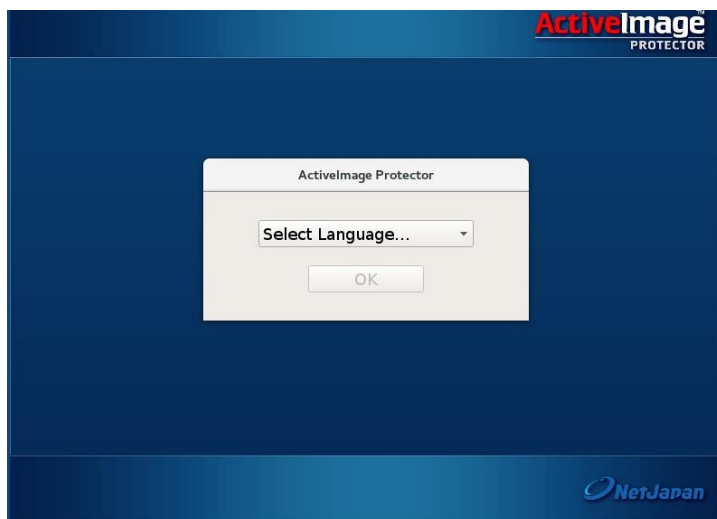 Click [Open Terminal] in [Utilities].
  Run mount command.
  # mount -t cifs //<ip address>/<shared folder name> /mnt -o user=<user name>,password=<Password>

  In domain environment

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> # mount -t cifs //<ip address>/< shared folder name > /mnt -o user=<user name>,password=< Password>,domain=<Domain>
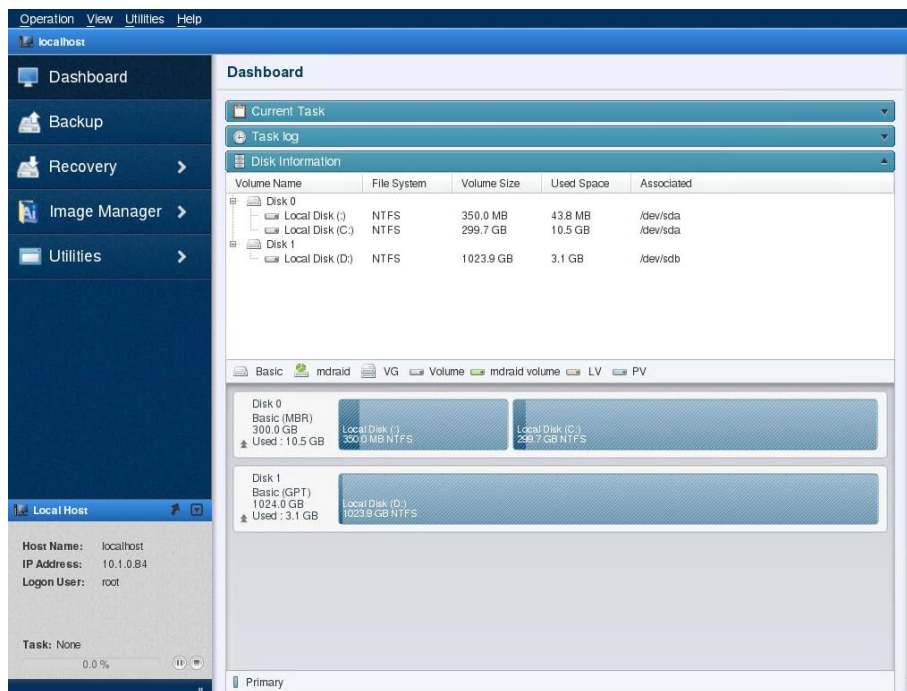
<Operating Procedures>

1) While ft Server is duplexed, shut down Windows operating system.

2) Please plug off the power cord from the power outlet and remove hard disk from CPU/IO module 1.

3) Start up your computer using the product media (Linux-based boot environment) of ActiveImage Protector 2018 for Express5800/ft Server.

4) When the following boot menu is displayed, click [Select Language] and select [English]. Click [OK].

5) Console is started with [Dashboard].

6) Selection of network shared folder for the destination to save backup image files requires the location be mapped to save image files by selecting [Utilities] – [Mount (Network)]. The following are the operating procedures for mapping a network shared folder.

7) Select [Mount (Network)] in [Utilities]. Networked computers are listed in [Networked computers and Shared Folder].

   If the target computer is not listed, please specify the IP address in [Add IP address] dialog to manually include the target computer in the list of [Networked computers and shared folders].

8) Double-click the target computer and enter User Name and Password for authentication to browse the shared folder.

   When the access to the shared folder is successfully authenticated, a list of network shared folders is displayed. Select a shared folder to mount (map) and click [Mount].

9) The shared folder is mounted as "/mnt/NetVolume_<IP Address>_<shared folder name>". The network shared folder is now mounted (mapped).
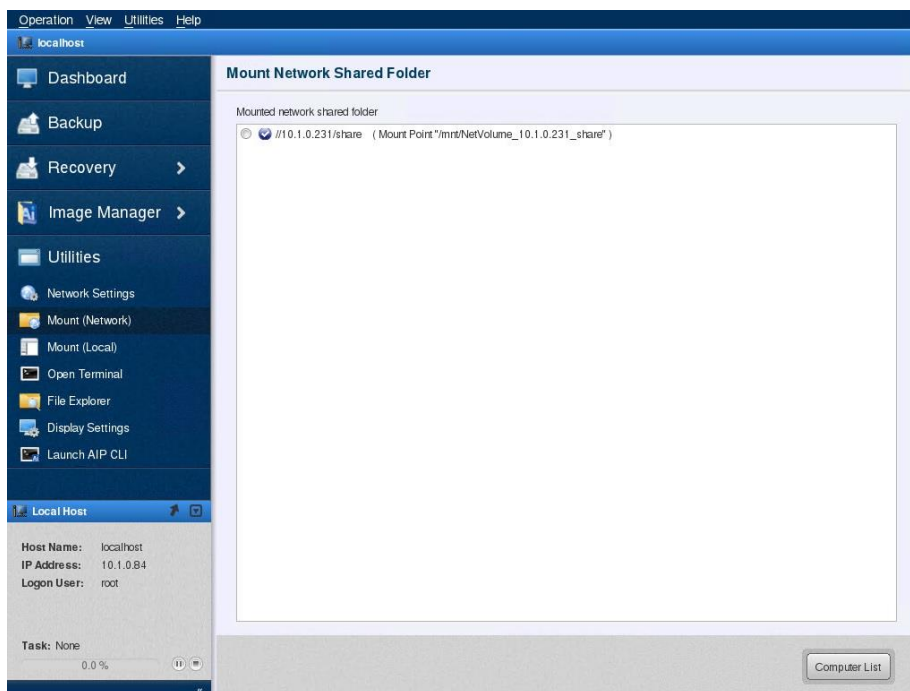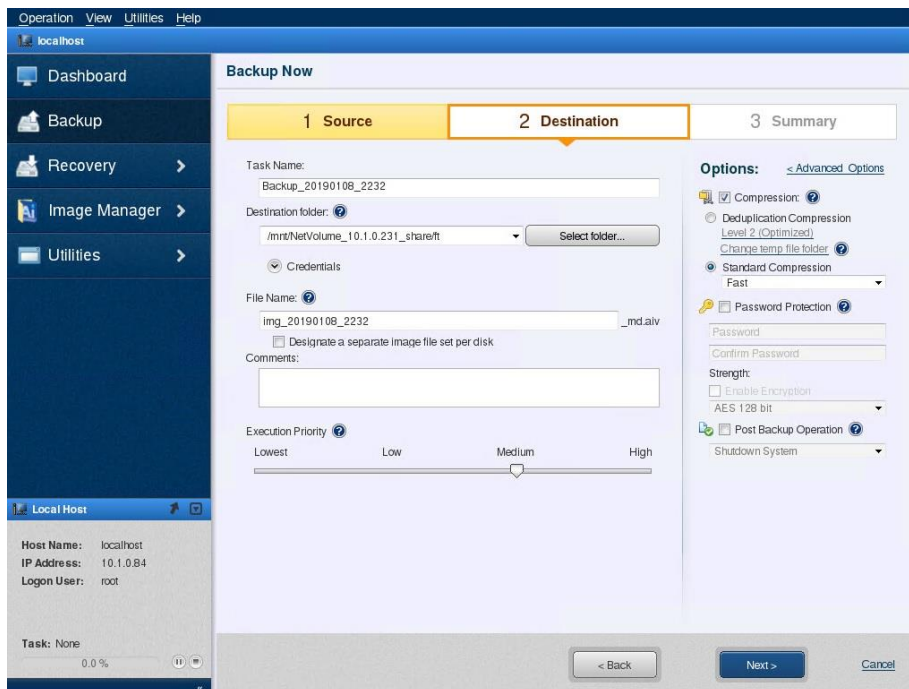
10) Click [Backup] and select the source disk to back up. The disks are listed starting from Disk 0 in sequential order. To back up the system and data disks entirely, check in the checkbox for the entire disks and click [Next].
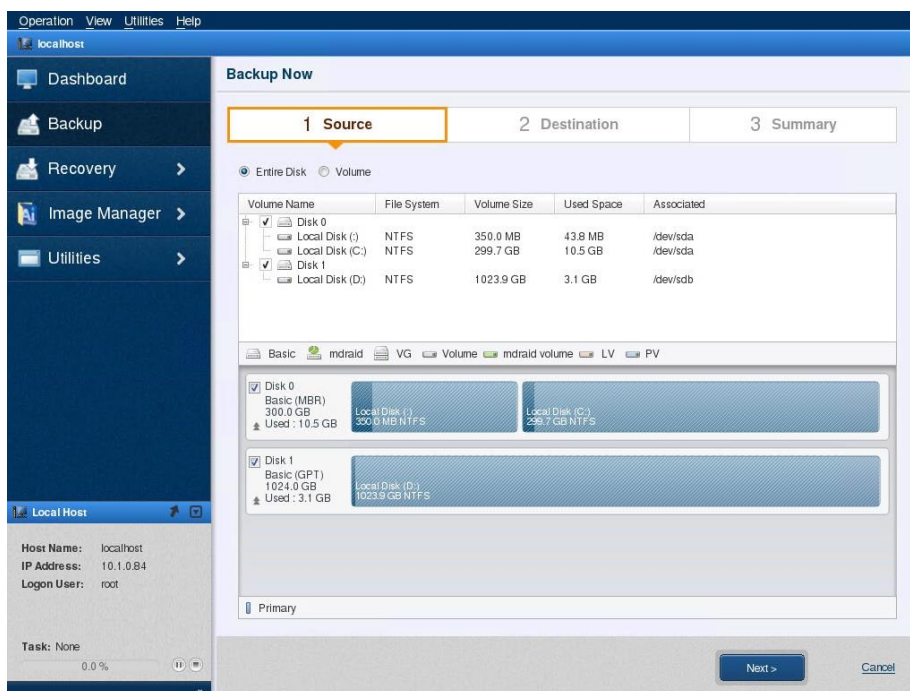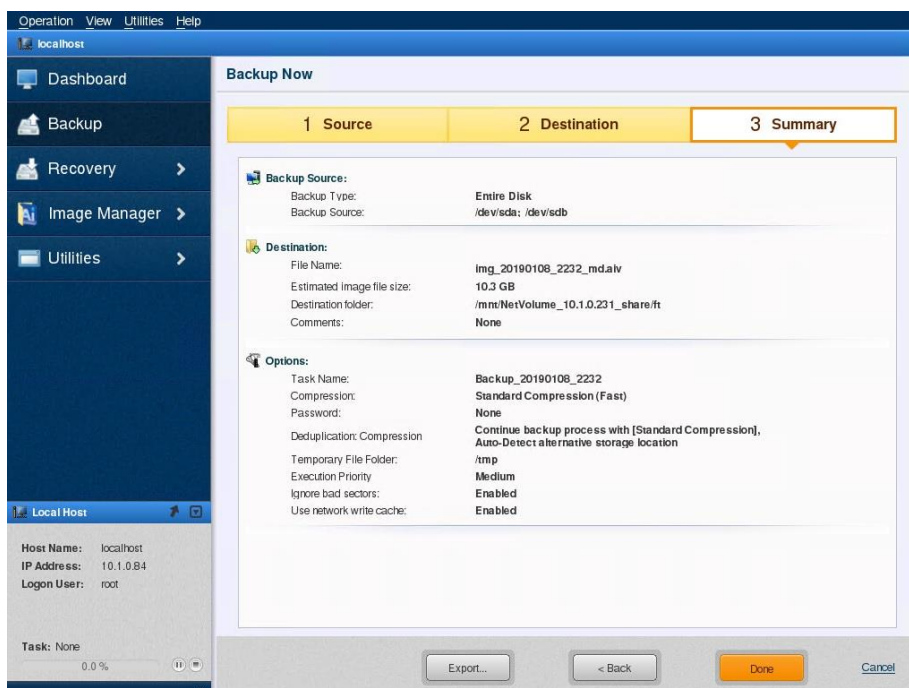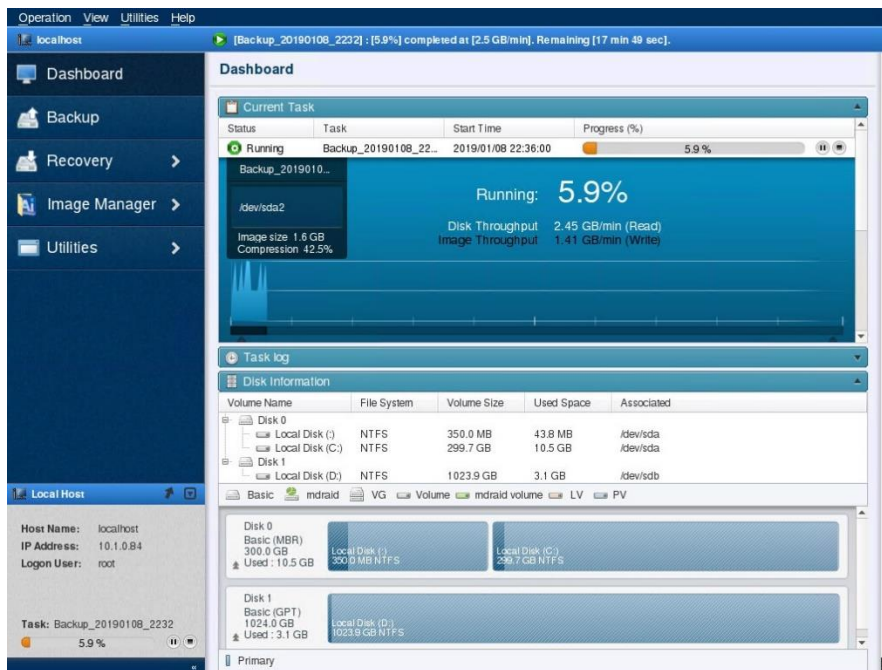
11) Specify the path of the destination storage and the file name. Click [Next]. You do not have to change the default setting for backup options.

12) [Summary] is displayed. Please make sure that you do not have to change the backup source and the destination storage. Click [Done] to start backup process.

13) Execution of backup task has started.

14) Upon completion of the backup process, go to [Operation] - [Finish] - [Shut down] to shut down the computer. As you are not allowed to eject the media, you can leave the media in the media drive.

15) Reinstall the disk to CPU/IO module 1 and plug in the power cord to the power outlet again.

16) Power on the computer.
If you use R320e/R320f model, select the default setting in the BIOS menu.
(BOOT Mode, XHCI Mode, OS Boot Monitoring)
If you use R320g model, select the default setting in the BIOS menu.
(OS Boot Monitoring)
At this moment, eject ActiveImage Protector 2018 for Express5800/ft Server boot environment media.

17) Once the computer boots up, you can operate the system as usual.
The use of Boot Environment may delete dual disk configuration by RDR utility. If you get this problem, you need to set dual disk configuration by using RDR utility again after Windows operating system is started. For Express5800/R320e, R320f, R320g, please refer to [Chapter 1 Windows Installation] - [3.10 Set Dual Disk Configuration] in Installation Guide (Windows Version) to set dual disk configuration by using RDR utility.
* The backup operating procedures using Windows PE-based boot environment are the

same as the operating procedures on Windows. Please refer to [Single Backup] in Quick Start Guide included in the product media.

3. Restore Express5800/ft Server

This chapter contains descriptions about the operating procedures to set dual disk configuration again on system disk and data disks in Express5800/R320e, R320f, R320g.

The operating procedures are provided on premises that Linux-based boot environment is used. For the operating procedures of the recovery process using Windows PE-based boot environment, please refer to Appendix.

Notes:

- To boot up ActiveImage Protector Boot Environment (AIP BE) on Model R320e/R320f, please change the BOOT Mode to Legacy and XHCI Mode to Disabled and OS Boot Monitoring to Disabled (for more detailed operating procedures, please refer to [Chapter 1 Installing Operating System] in Installation Guide (Windows)).

- For the operating procedures how to boot up ActiveImage Protector Boot Environment (AIPBE) on Model R320g, please refer to [Chapter 1 Installing Operating System] in Installation Guide (Windows)).

- With RDX drive connected to the system, if ActiveImage Protector Boot Environment (AIP BE) boots up, the file system on RDX is automatically mounted as "/mnt/<Disk number>_<Volume number> ".

- ActiveImage Protector 2018 for Express5800/ft Server does not support overwriting restore to an existing volume. Please make sure that the entire target hard disks for restoring image file and dual disk configuration are physically formatted to purge data before starting restore process.

- If there still remains the former setting information for RDR Utility in target hard disks for dual disk configuration, dual disk configuration may fail to set again. Please make sure that every target hard disks for dual disk configuration are physically formatted.

- Restore of backup image files have to be executed by disk.

- Restore of backup images of volumes configured as dynamic disk is not supported on boot environment. Launch RDR Utility to set dual disk configuration on disks configured as dynamic disk on Windows and overwrite to restore them to the volumes configured on dynamic disk.

- For more detailed operating procedures for physically formatting hard disks, if you use Express5800/R320e, R320f, R320g, please refer to "Chapter 3" "3. SAS Configuration" – "3.3 Physically Formatting Hard Disk Drive".

- In the system restored from a backup image file, LUN number may not be assigned beginning from 1, which does not cause any problem.

- If ft servers do not work properly due to dual-failure on dual-configured hardware, you may not be able to execute restore process. For the operating procedures how to restore ft servers hardware, please consult PP Support Service (Program Product Support Service), NEC Corporation.

- Execution of Mount command in Utilities in Linux-based boot environment may not display a list. If you get this problem, run mount command from the terminal.
  Click [Open Terminal] in [Console] – [Utilities].
  Run mount command.
   # mount -t cifs //<ip address>/< shared folder name > /mnt -o user=<user name>,password=<password>
   In domain environment
   # mount -t cifs //<ip address >/< shared folder name > /mnt -o user=<user name>,password=<password>,domain=<domain>

- When restored from a backup image, the disk number is assigned but different from the one before. After dual disk configuration by RDR utility, the disk number is assigned the same as the slot number.

- If the drive letter is assigned in Windows but different from the one before, go to Disk Management and please reassign the drive letter after restoring the system.

3-1 Restore system disk and data disk

This chapter contains descriptions about the operating procedures how to restore the system disk and data disk at the same time.
Please be aware that the data located on local disk should be entirely deleted.
You can use backup image files created by executing online or cold backup task.

1) Before starting restore process, the target hard disks to restore image files and to set dual disk configuration after restore process have to be physically formatted, so that the data
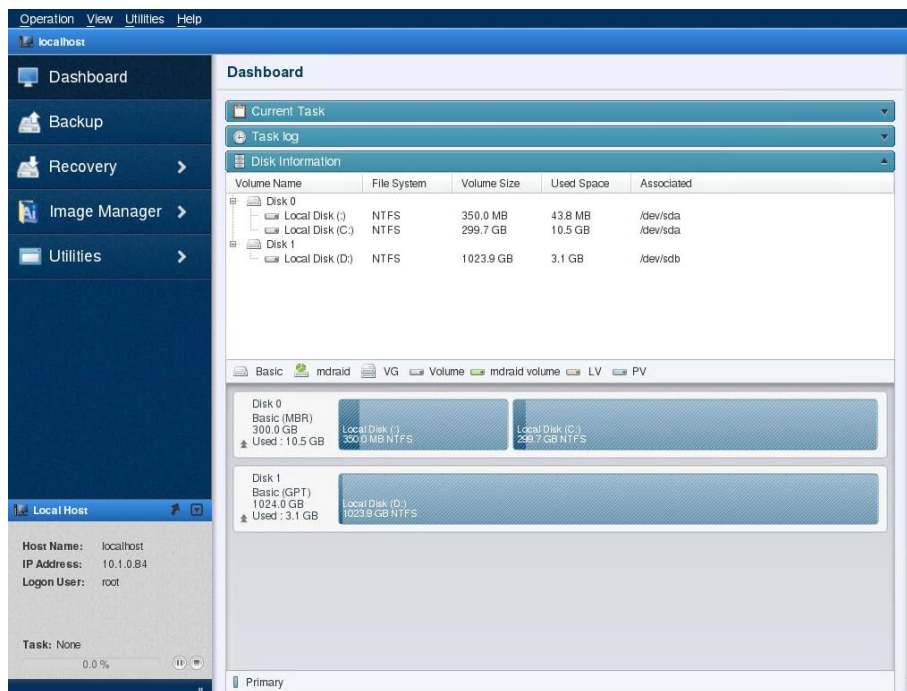
located on the target hard disks have to be entirely purged.

2) Before starting Linux-based boot environment, please make sure that restore target disks are installed in the slots of CPU/IO module 0.　Plug off the power cord from the power outlet and remove hard disk from CPU/IO module 1.

3) Boot into boot environment by using ActiveImage Protector 2018 for Express5800/ft Server boot environment media.

4) When the following boot menu is displayed, click [Select Language] and select [English]. Click [OK].

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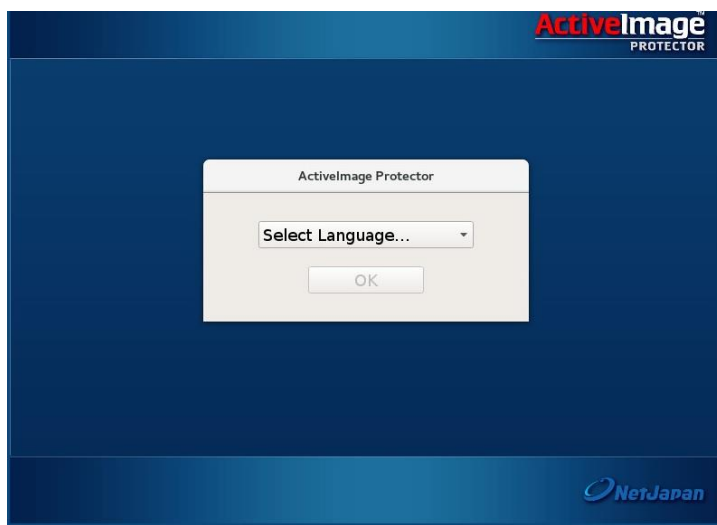
5) Console is started with [Dashboard] window.

6) Selection of network shared folder for the destination to save backup image files requires the location be mapped to save image files by selecting [Utilities] – [Mount (Network)]. The following are the operating procedures for mapping a network shared folder.

7) Select [Mount (Network)] in [Utilities]. Networked computers are listed in [Networked computers and Shared Folder].

   If the target computer is not listed, please specify the IP address in [Add IP address] dialog to manually include the target computer in the list of [Networked computers and shared folders].

8) Double-click the target computer and enter User Name and Password for authentication to browse the shared folder.

9) When the access to the shared folder is successfully authenticated, a list of network shared folders is displayed. Select a shared folder to mount (map) and click [Mount].

10) The shared folder is mounted as "/mnt/NetVolume_<IP Address>_<shared folder name>".
The network shared folder is now mounted (mapped).
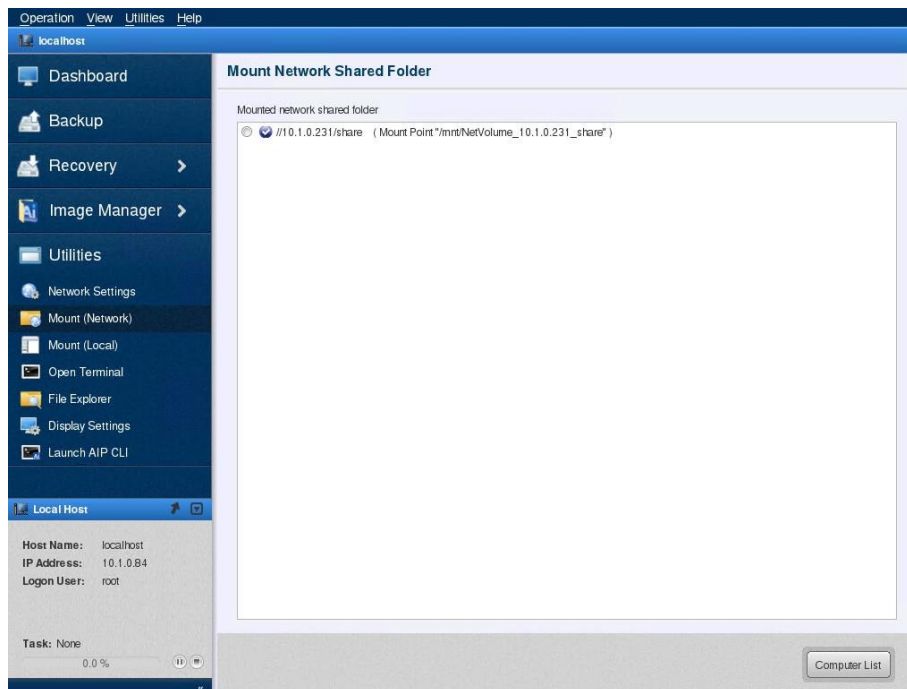
11) Click [Recovery] – [Volume Recovery]. Select [Backup Destination] – [Host] – [Recovery Point] and the image file to restore. Click [Next].
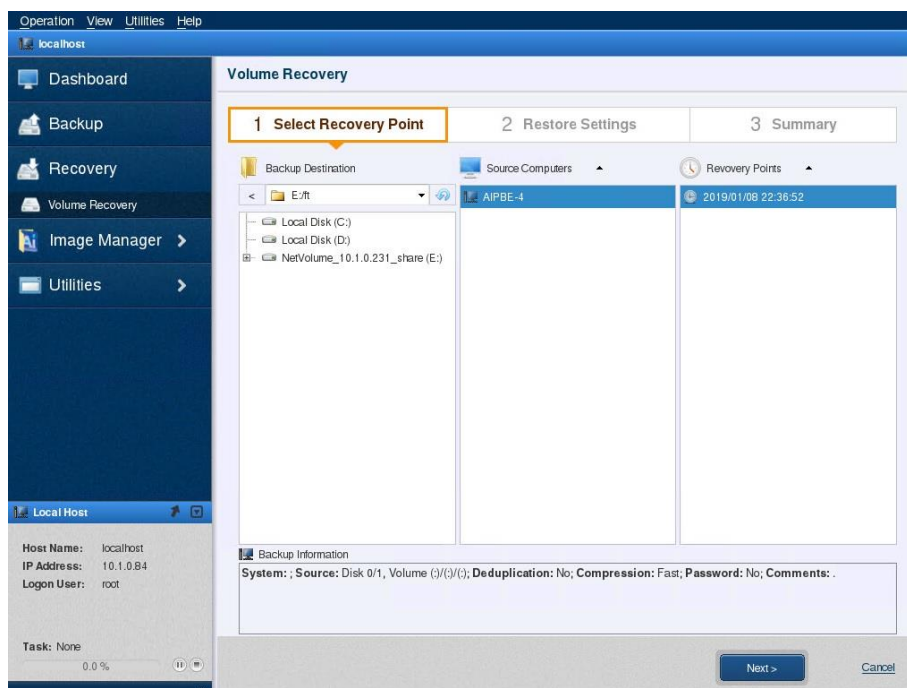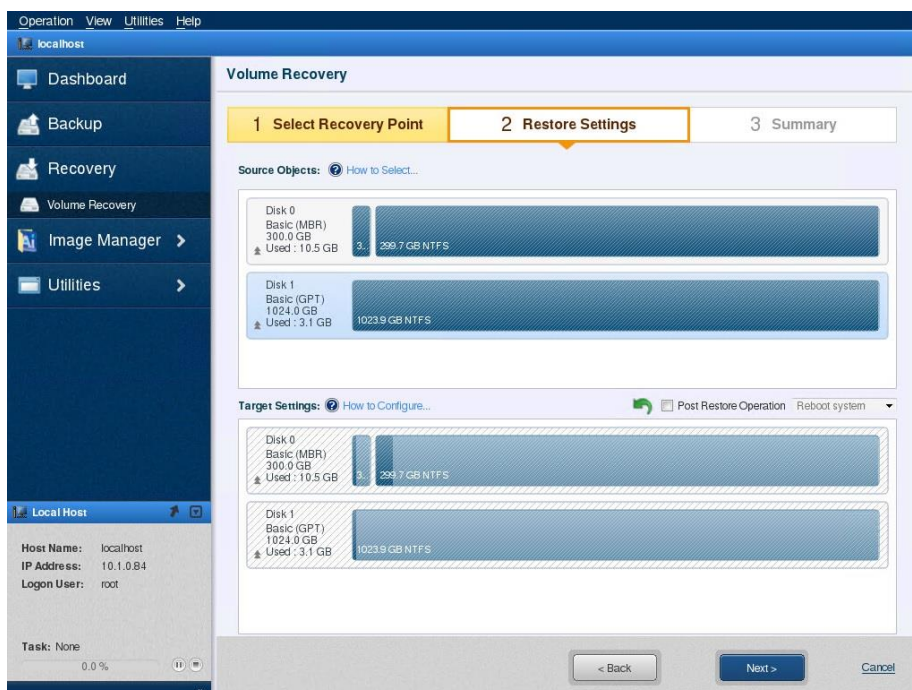
12) Specify the restore target. Drag and drop the image including disk 0 to the target disk 0, and the image including disk 1 to the target disk 1. Or, right-click the restore source and specify the restore target.
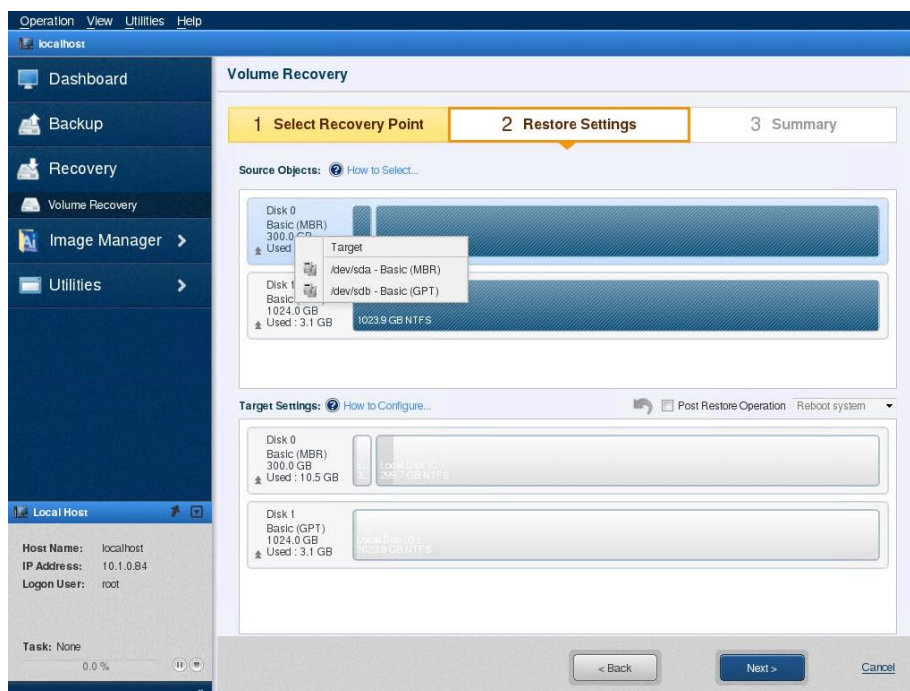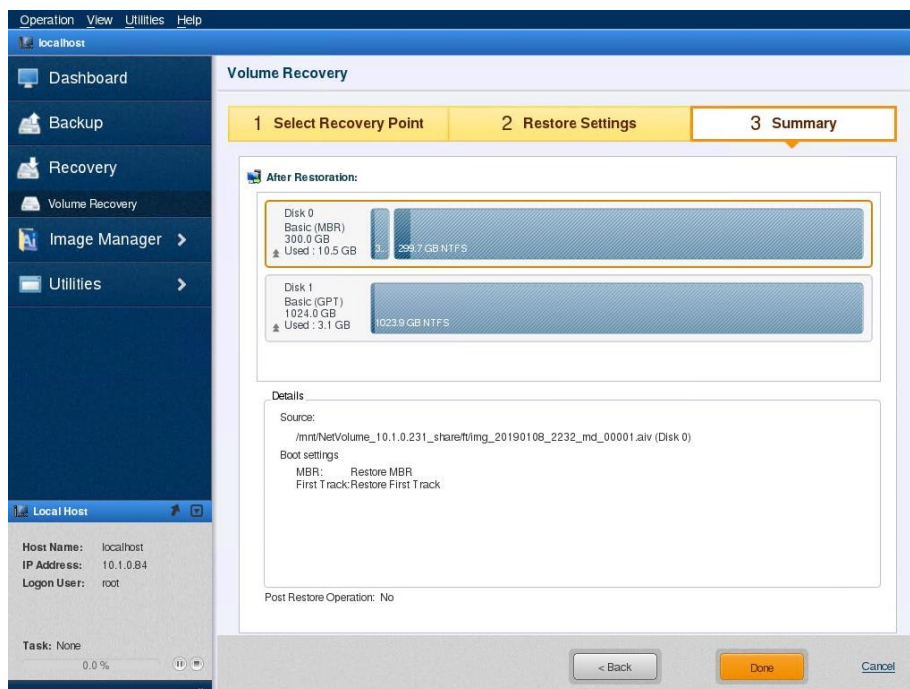

13) Upon completion of specifying the restore target of the entire disks, click [Next].

14) [Summary] page is displayed. Please review the settings for the restore source image file and the target disk. Click [Done] to start restore task.

15) Restore task is started.
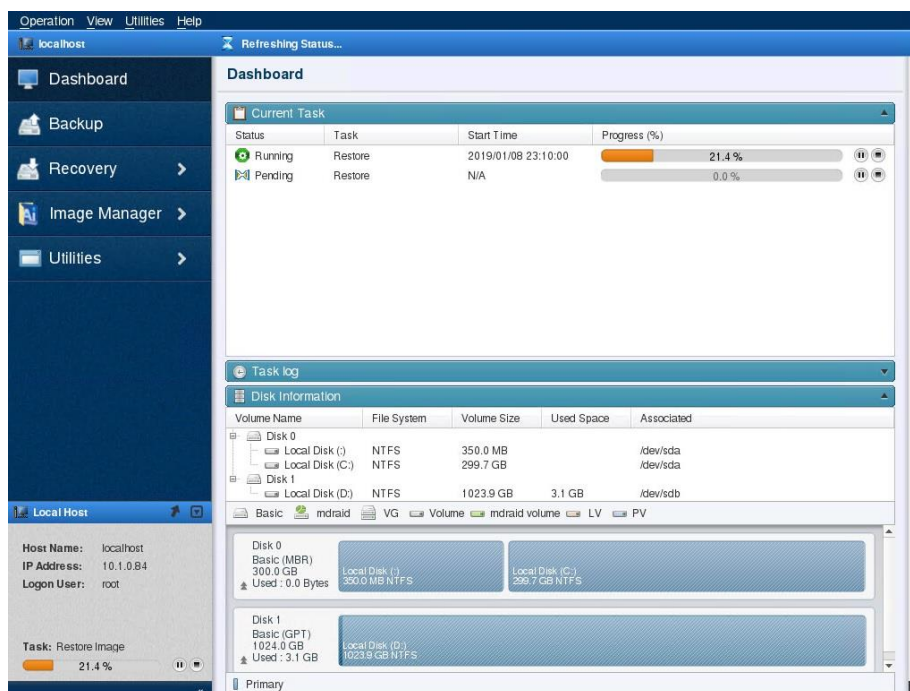
16) Upon completion of restore procedures, go to [Operation] - [Finish] - [Shut down] to shut down the computer. As you are not allowed to eject the media, you can leave the media in the media drive.

17) Reinstall the disk to CPU/IO module 1 and plug in the power cord to the power outlet again.

18) Power on the computer.

   If you use R320e/R320f model, select the default setting in the BIOS menu.

   (BOOT Mode, XHCI Mode, OS Boot Monitoring)

   If you use R320g model, select the default setting in the BIOS menu.

   (OS Boot Monitoring)

   At this moment, eject ActiveImage Protector 2018 for Express5800/ft Server boot environment media.

19) Set Dual-Disk Configuration on System Disk again after booting up Windows system. Launch RDR Utility and go to [PCI module 10] - [SCSI Enclosure] - [Slot 0] and monitor the status of the disk in the right pane.

   If the disk in [Slot 0] is in "Boot, Configured, Active, Imported" status, for Express5800/ R320e, R320f, R320g, please refer to [Chapter 1 Windows Installation] - [3.10 Set Dual Disk Configuration] in Installation Guide (Windows Version) to set dual disk configuration by using RDR utility. This is the end of restore operation and no further operating procedures are required to take.

   If the disk in [Slot 0] is in "Unconfigured" status, right-click [SCSI Enclosure] – [Slot 0], then click [Create RDR Virtual Disk] in the context menu.


   Click [Yes] to the message "To apply the changes, you may need to restart your computer. Are you sure you want to proceed with the further process?". Windows restarts following the above message.

20) When Windows starts up, go to [Disk Management]. If the disk in CPU I/O module 0 is GPT formatted, the target disk in CPU I/O module 1 for dual disk configuration needs to be GPT formatted.
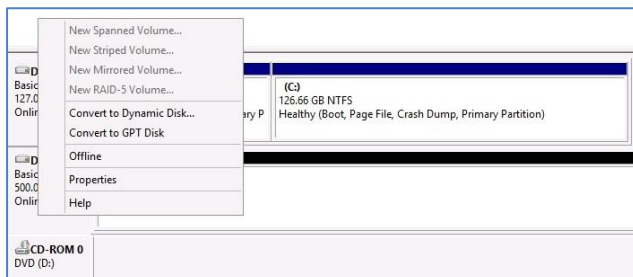
21) Launch RDR Utility, go to [PCI module 11] - [SCSI Enclosure] and right-click on [Slot 0], then click [Add Physical Disk to RDR Virtual Disk] in the context menu. You should get the message "Normally completed." Click [OK].

22) Go to [Logical Disk Information] and click [RDR Virtual Disk x]. Please make sure that [Status] is [Resync XX%].
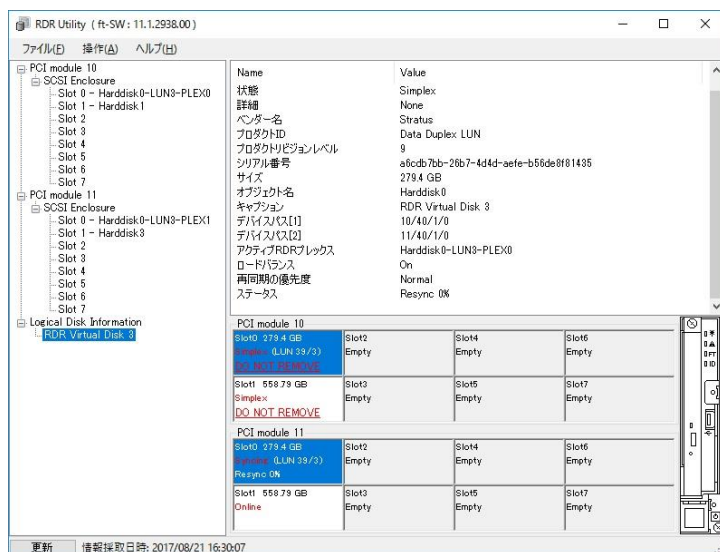
23) Now, set dual disk configuration on data disk. If you use Express5800/ R320e, R320f, R320g, please refer to Installation Guide (for Windows) and take the procedures of [Chapter 1 Windows Installation] - [3.10 Set Dual Disk Configuration] to set dual disk configuration by using RDR utility.

Notes:

● Depending on the server OS you use, when data disks are restored in boot environment, the disks may be recognized as "Offline" on the restored Windows operating system. Go to [Server Manager] – [Storage Area] and toggle "Offline" status of appropriate disks to

"Online".　As for the volumes on data disk, you need to set them to "Online" and reassign the drive letters.
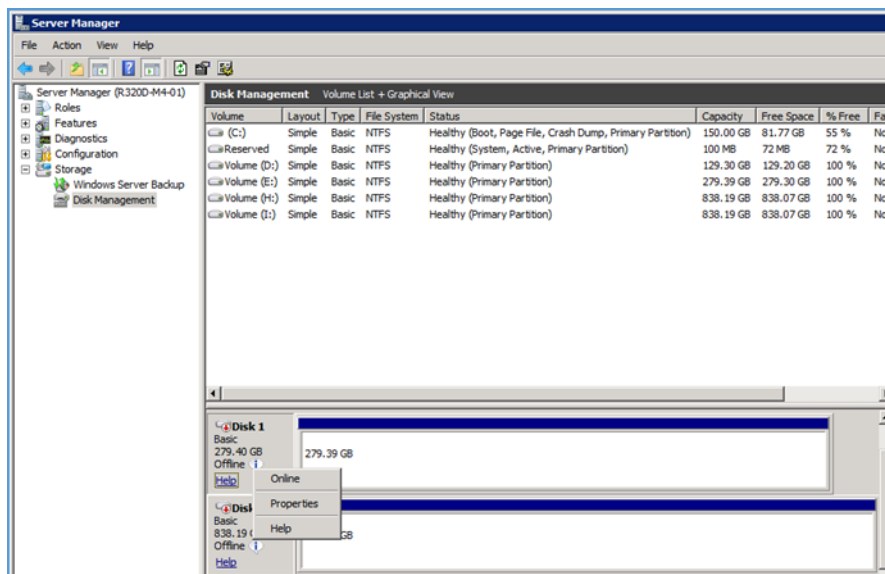
3-2 Restore system disk only

This chapter contains descriptions about the operating procedures how to restore the system disk only while the data are retained on the data disk.
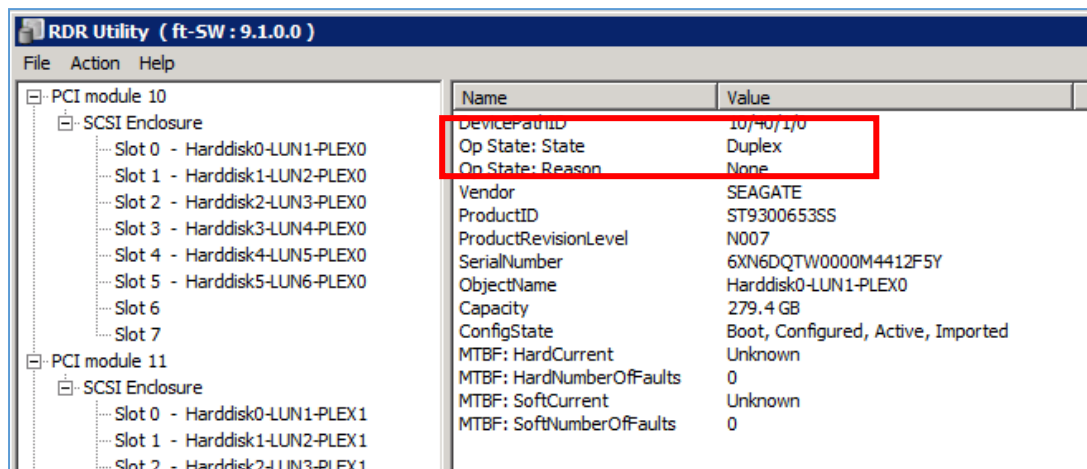You can use backup image files created by executing online or cold backup task.

If you need to keep the data in data disk instead of purging them and restore system disk alone, please delete dual disk configuration on data disk by using RDR utility on operating system before starting restore process by using this product. The following are the procedures to delete dual disk configuration, as an example for deleting dual disk configuration on data disks in Slot 1 and Slot 2.

1) Go to [Start] menu – [All Programs] - [RDR] – [RDR Utility] and start RDR utility.

2) Please make sure that the status of every physical disks on CPU/IO module 0 and module 1 indicates [Duplex].

3) Go to [Server Manager] – [Storage Area] on the operating system.

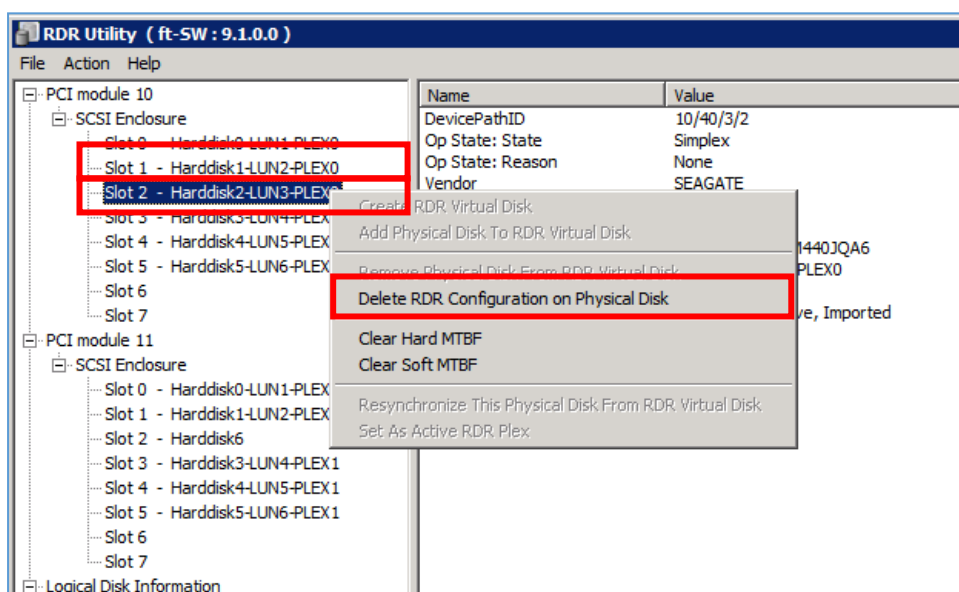4) Please make sure that the status of data disks indicates as follows.

5) Launch RDR Utility and go to [PCI module 11] - [SCSI Enclosure], right-click on [Slot 1], [Slot 2], then click on [Remove Physical Disk From RDR Virtual Disk] in the context menu.

6) In RDR Utility go to [PCI module 10] - [SCSI Enclosure], right-click [Slot 1], [Slot 2], then click [Delete RDR Configuration on Physical Disk] on the context menu.

7) Go to [Server Manager] – [Storage Area] and see if dual disk configuration is deleted and the disk installed in CPU/IO module 1 is displayed as blank. Now, dual disk configuration is deleted by using RDR utility.

8) Shut down operating system and remove data disks from Slot1 and Slot2 of CPU/IO module 0.

9) Before starting restore process, the target hard disks (Slot 0 of CPU/IO Module 0 and Slot 0 of CPU/IO Module 1) to restore image files and to set dual disk configuration after restore process have to be physically formatted and the data on the target hard disks should be purged.

10) Before starting ActiveImage Protector 2018 for Express5800/ft Server's boot environment, please make sure restore target disk is installed in the slot of CPU/IO module 0. Next, please plug off the power cord from the power outlet and remove hard disks from CPU/IO module 1 and then start boot environment.

11) Boot up boot environment from ActiveImage Protector 2018 for Express5800/ft Server product media.

12) When the following menu dialog is displayed, click [Select Language] and select [English]. Click [OK].
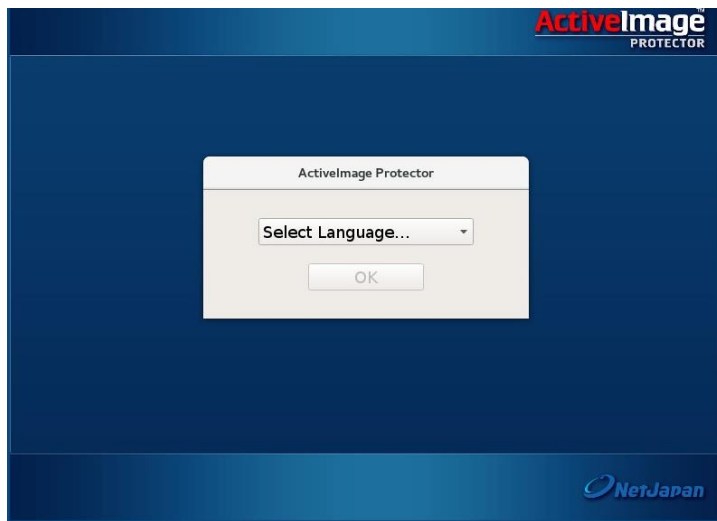

13) Console is started with [Dashboard].
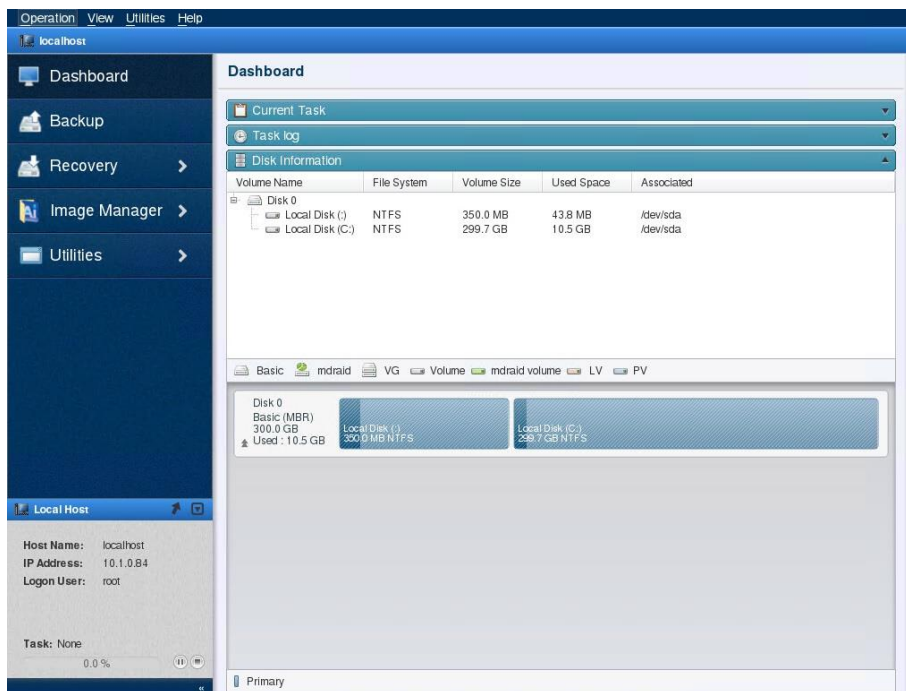
14) Selection of network shared folder for the destination to save backup image files requires the location be mapped to save image files by selecting [Utilities] – [Mount (Network)]. The following are the operating procedures for mapping a network shared folder.

15) Select [Mount (Network)] in [Utilities]. Networked computers are listed in [Networked computers and Shared Folder].
If the target computer is not listed, please specify the IP address in [Add IP address] dialog

to manually include the target computer in the list of [Networked computers and shared folders].

16) Double-click the target computer and enter User Name and Password for authentication to browse the shared folder.

17) When the access to the shared folder is successfully authenticated, a list of network shared folders is displayed. Select a shared folder to mount (map) and click [Mount].

18) The shared folder is mounted as "/mnt/NetVolume_<IP Address>_<shared folder name>". The network shared folder is now mounted (mapped).
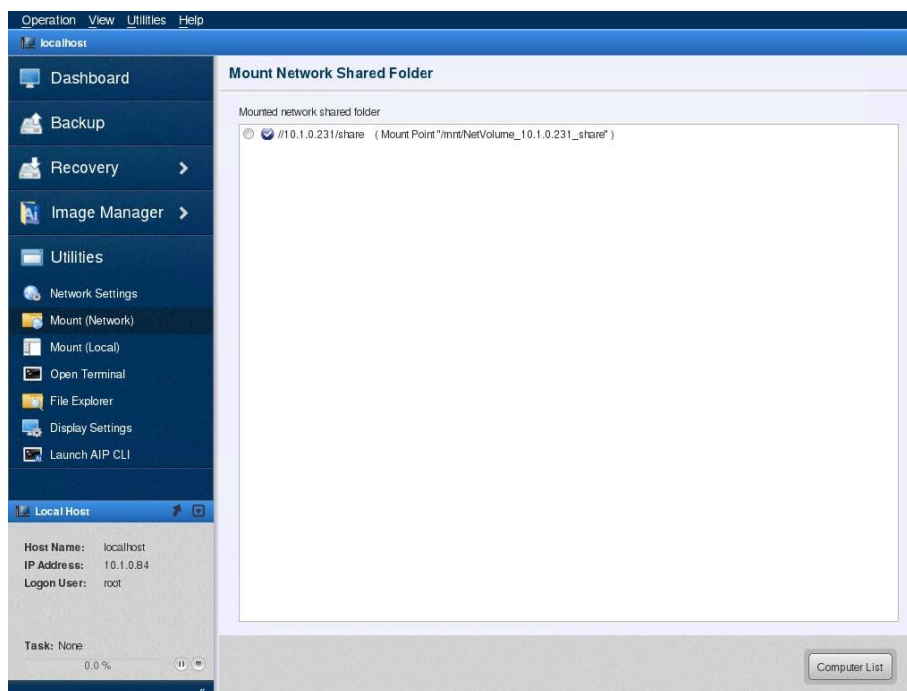
19) Select [Recovery] – [Recovery Point]. Select [Backup Destination] – [Host] – [Recovery Point] and the image file to restore. Click [Next].
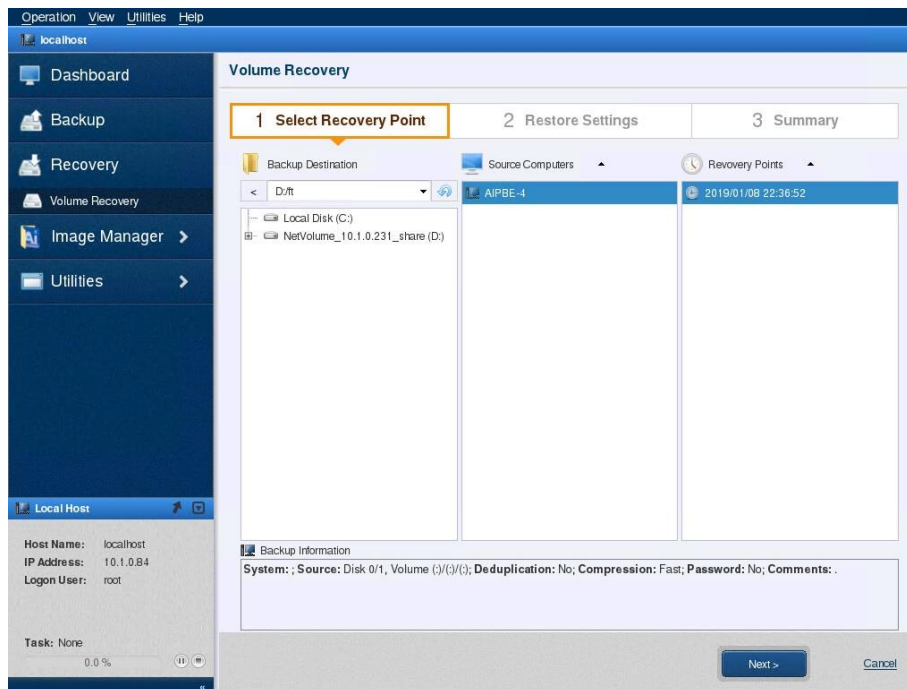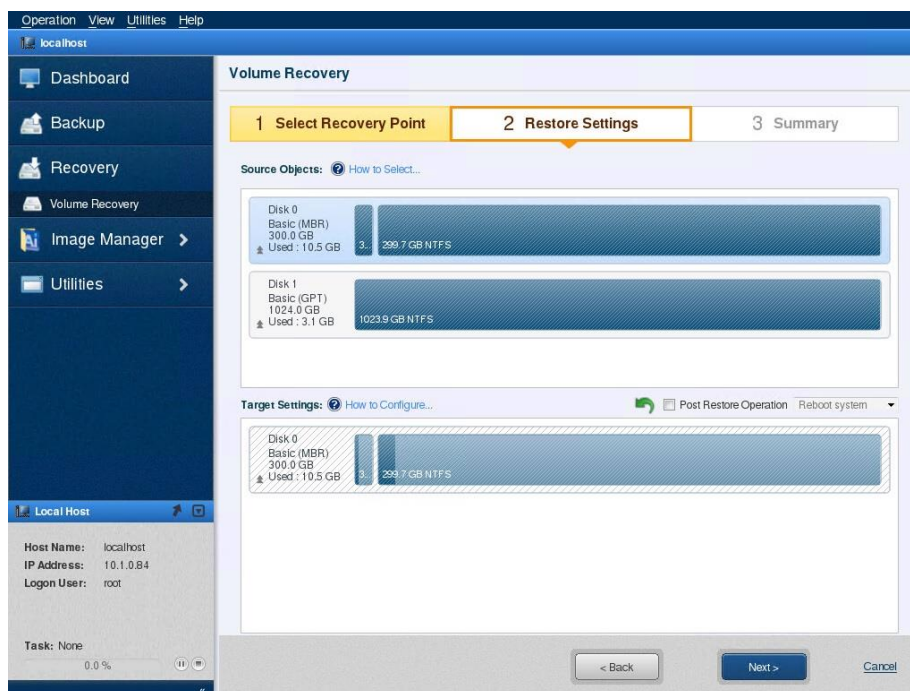

20) Specify the restore target. Drag and drop the image including disk 0 to the target disk 0. Or, right-click the restore source and specify the restore target.
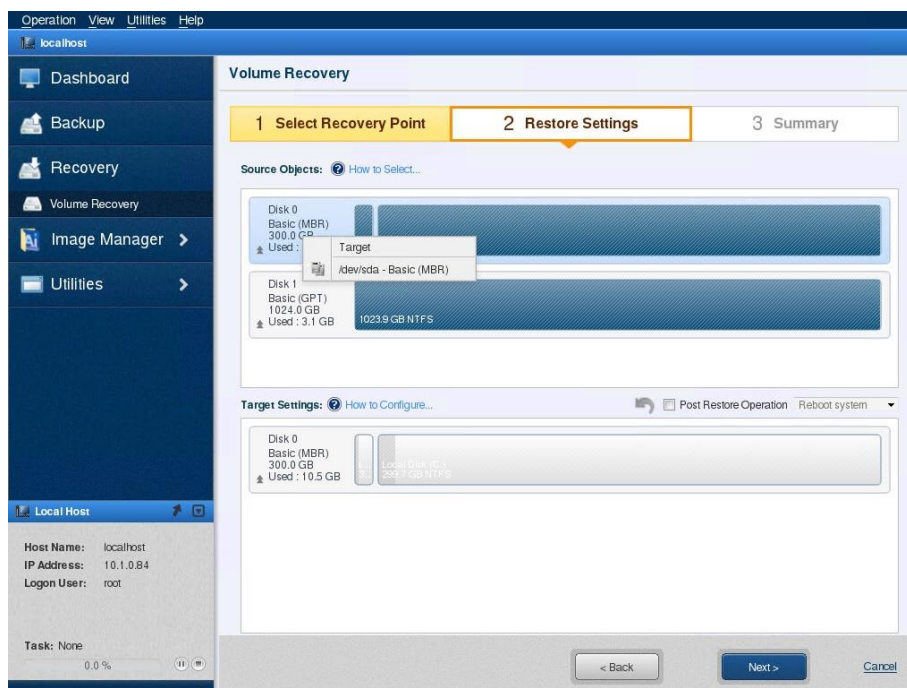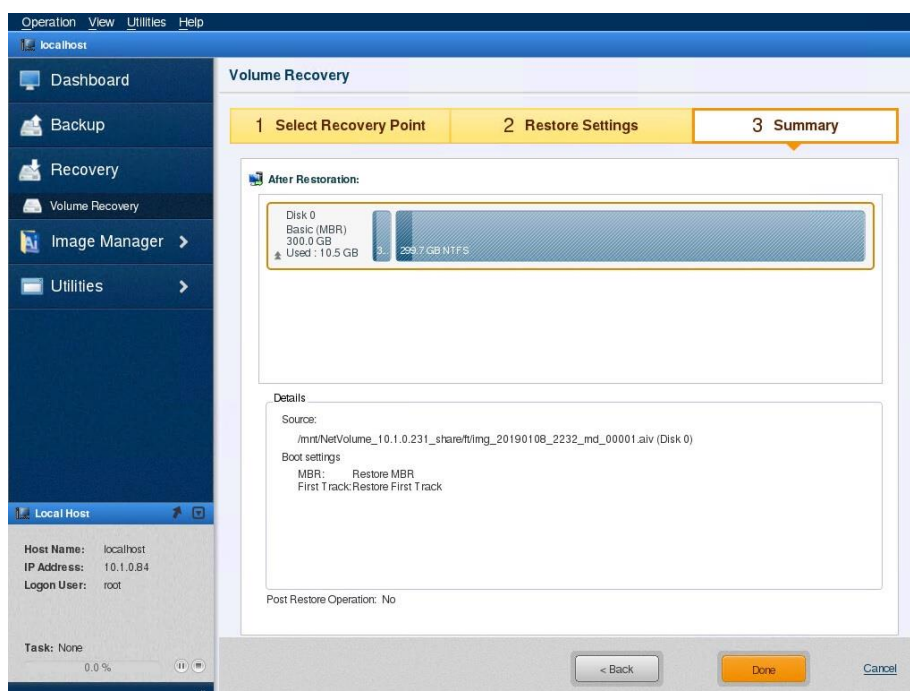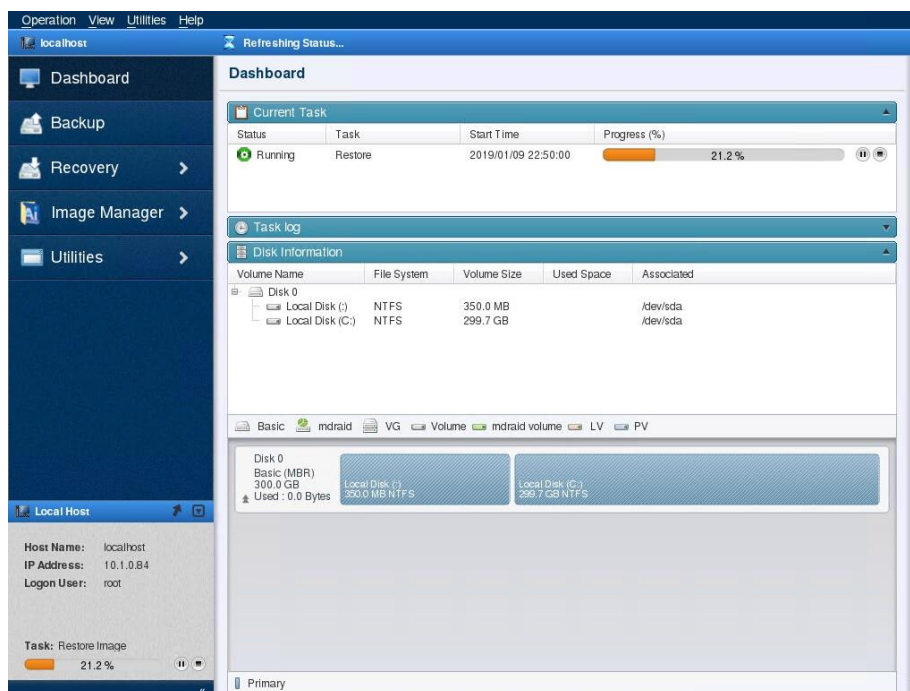
21) Upon completion of specifying the restore target of the entire disks, click [Next].

22) [Summary] page is displayed. Please review the settings for the restore source image file and the target disk. Click [Done] to start restore task.

23) Restore task is started.

24) Upon completion of restore procedures, go to [Operation] - [Finish] - [Shut down] to shut down the computer. As you are not allowed to eject the media, you can leave the media in the media drive.

25) Reinstall the removed disk to CPU/IO module 0. Then, reinstall the removed disk to CPU/IO module 1 and plug in the power cord to the power outlet again.

26) Power on the computer.
   If you use R320e/R320f model, select the default setting in the BIOS menu.
   (BOOT Mode, XHCI Mode, OS Boot Monitoring)
   If you use R320g model, select the default setting in the BIOS menu.
   (OS Boot Monitoring)
   At this moment, eject ActiveImage Protector 2018 for Express5800/ft Server's product media.

27) Set dual-disk configuration on system disk again after booting up Windows system. Launch RDR Utility and go to [PCI module 10] - [SCSI Enclosure Slot 0] and monitor the status of the disk in the right pane.

   If the disk in [Slot 0] is in "Boot, Configured, Active, Imported" status, for Express5800/ R320e, R320f, R320g, please refer to [Chapter 1 Windows Installation] - [3.10 Set Dual

Disk Configuration] in Installation Guide (Windows Version) to set dual disk configuration by using RDR utility. This is the end of restore operation.

If the disk in [Slot 0] is in "Unconfigured" status, right-click [SCSI Enclosure] – [Slot 0], then click on [Create RDR Virtual Disk] in the context menu.
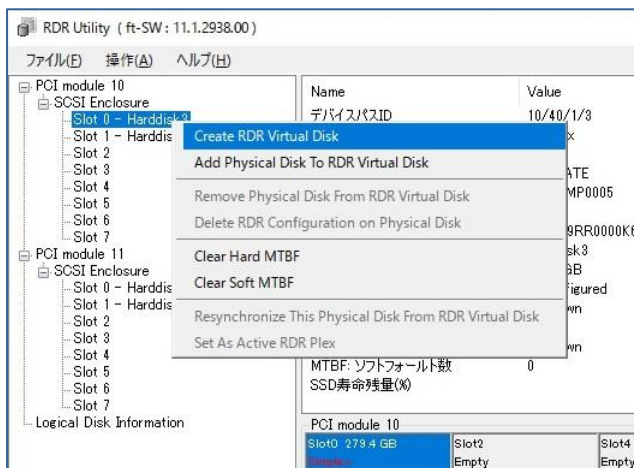

Click [Yes] to the message "To apply the changes, you may need to restart your computer. Are you sure you want to proceed with the further process?". Windows restarts following the above message.

28) When Windows starts up, go to [Disk Management]. If the disk in CPU I/O module 0 is GPT formatted, the target disk in CPU I/O module 1 needs to be GPT formatted.
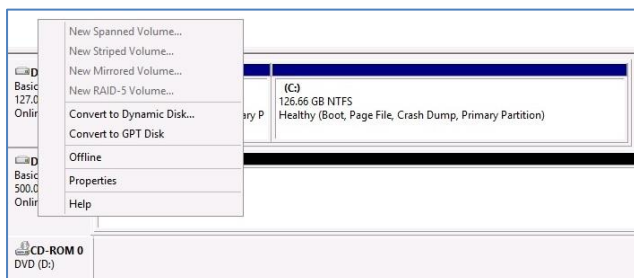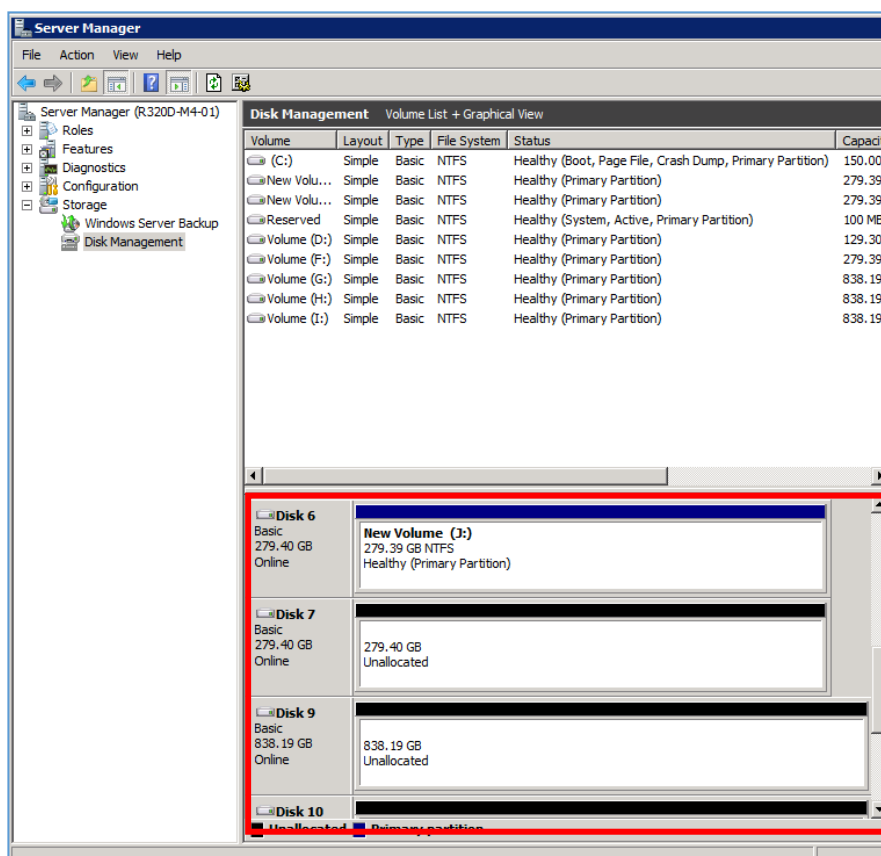

29) Launch RDR Utility, go to [PCI module 11] - [SCSI Enclosure] and right-click on [Slot 0], then click [Add Physical Disk to RDR Virtual Disk] in the context menu. You should get the message "Normally completed." Click [OK].
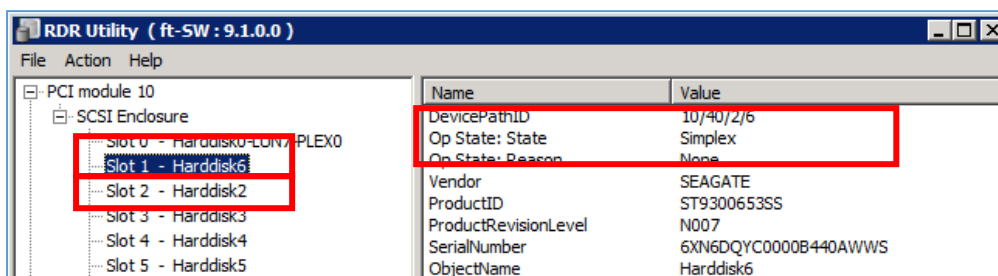
30) Go to [Logical Disk Information] and click [RDR Virtual Disk x]. Please make sure that [Status] is [Resync XX%].
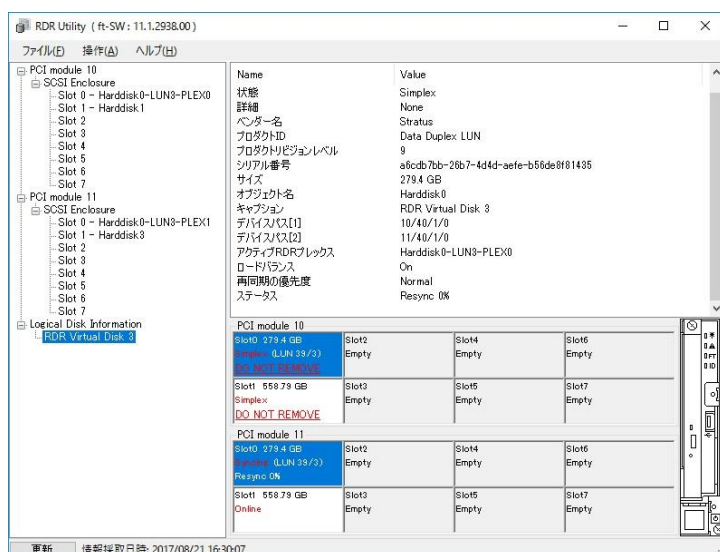
31) Now, set dual disk configuration on data disk. Go to [Server Manager] – [Storage Area] and toggle "Offline" status of appropriate disks to "Online".
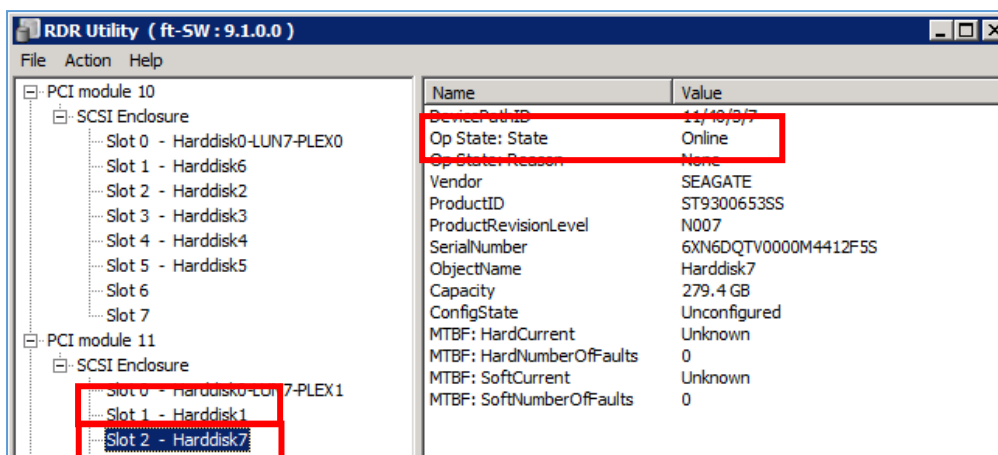
32) Launch RDR Utility, go to [PCI module 10] - [SCSI Enclosure] and make sure that the status of [Slot 1] and [Slot 2] are "Simplex".

Important

If the status of the above disks shows "Online" instead of "Simplex", please restart the operating system. After 5 minutes from restart of the operating system, launch RDR Utility and make sure that the status changes as shown above.

33) Launch RDR Utility and go to [PCI module 11] - [SCSI Enclosure]. Ensure that the status of the physical disks in [Slot 1] and [Slot 2] is "Online".


Important

If the status of the above disks shows "Simplex" instead of "Online", the disk may be installed in a wrong slot. Please make sure that the disk is installed in an appropriate slot and monitor the status of the disk again after reinstallation.

34) Launch RDR Utility, go to [PCI module 10] - [SCSI Enclosure], right-click on [Slot 1], [Slot 2] and select [Create RDR Virtual Disk] in the context menu.
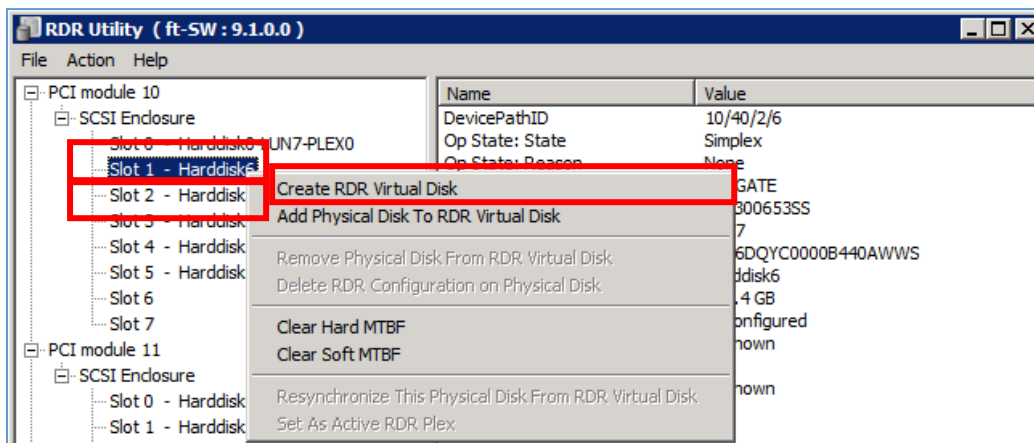
35) Go to [PCI module 11] - [SCSI Enclosure], right-click on [Slot 1], [Slot 2] and select [Add Physical Disk To RDR Virtual Disk] in the context menu.
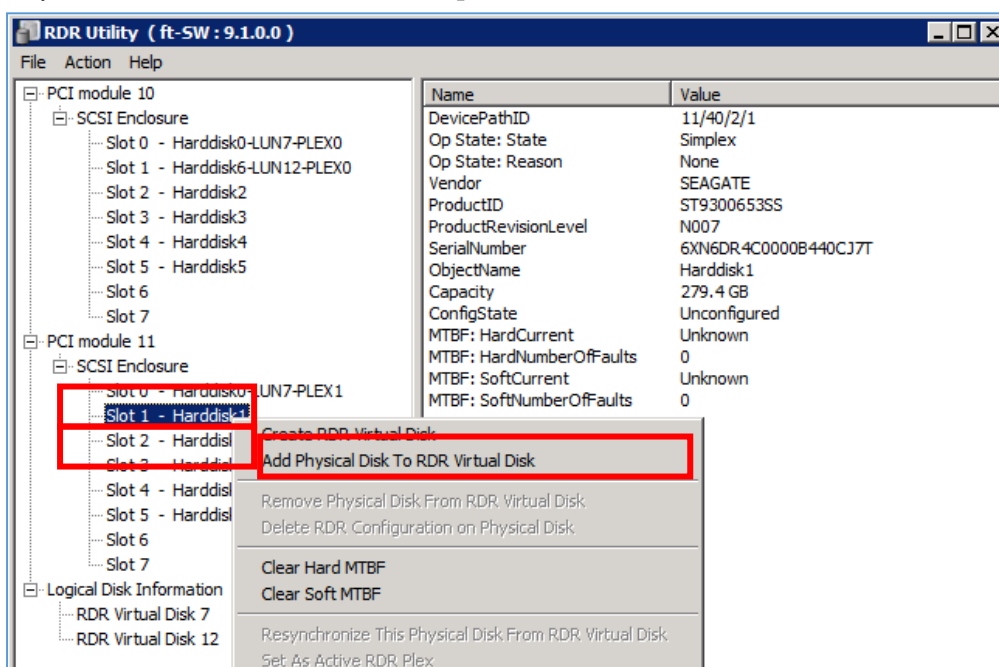
36) Go to [Server Manager] – [Storage Area] and monitor the status of the data disk. Toggle "Offline" status of the disk to "Online". If no drive letter is assigned or the assigned drive letter is not appropriate, please assign a correct drive letter.
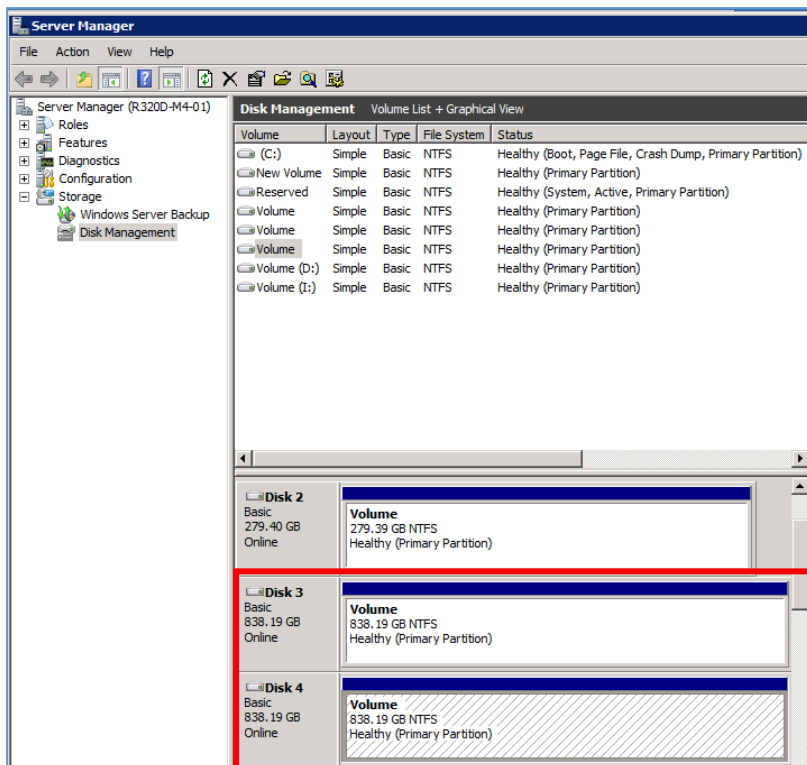
37) Please make sure that the status of every physical disks on RDR Utility indicates [Duplex].

Notes:

● Depending on the server OS you use, and when data disks are restored in boot environment, the disks may be recognized as "Offline" on the restored Windows operating system. Go to [Server Manager] – [Storage Area] and toggle "Offline" status of appropriate disks to "Online". As for the volumes on data disk, you need to set them to "Online" and reassign the drive letters.

<For your reference>
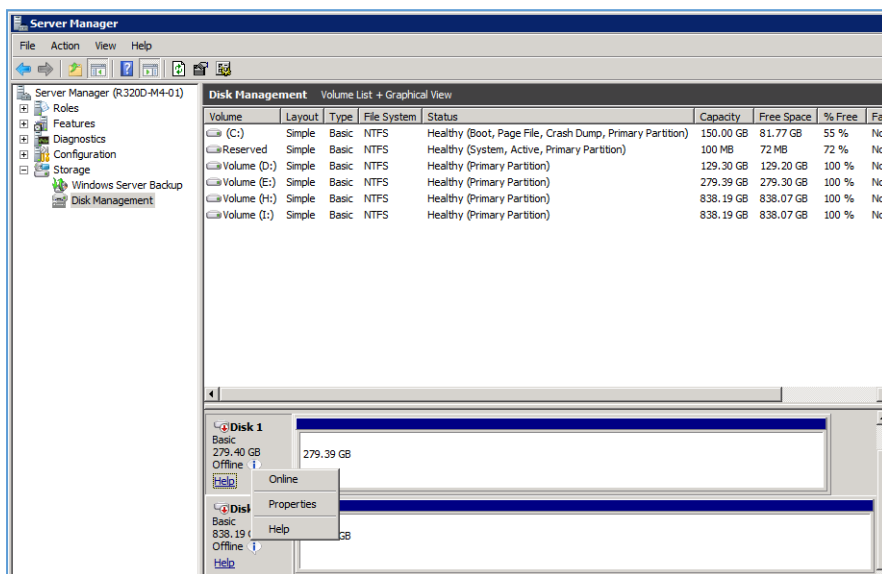
● Q: After reinstallation of 【ft Server/Windows】 OS, the previously used data disks, when installed again, were not duplexed.

A: Please visit <https://www.support.nec.co.jp/View.aspx?NoClear=on&id=3150108390>

3-3 Restore Data Disk Only

This chapter contains descriptions about the operating procedures how to restore the data disk only while the data on the system disk are maintained.

You can use backup image files created by executing online or cold backup task.

If you need to keep the data in system disk instead of purging them and restore data disk alone, please execute hot restore task from AIP console on Windows.

Note:

● While keeping dual disk configuration by RDR utility, run restore by volume task. If you restore the entire disk, dual disk configuration by RDR utility is deleted.

● In case of restoring to a new disk, please run restore task by using ActiveImage Protector after setting dual disk configuration by using RDR utility.

1) Start ActiveImage Protector on Windows.

2) Select [Recovery] - [Volume Recovery]. Select a recovery point and click [Next].
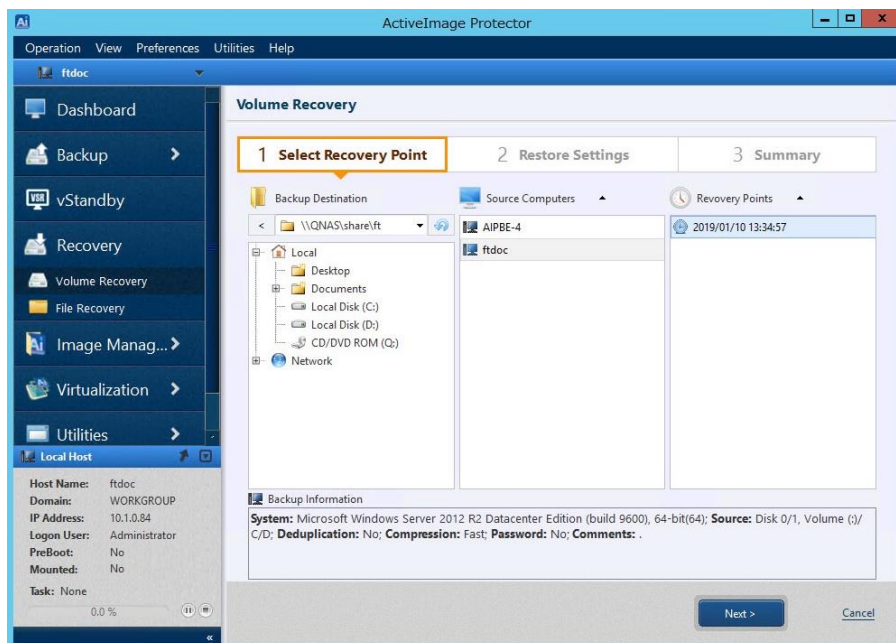
3) [Restore Settings] page is displayed. The contents in the restore source image file are displayed in [Source Objects] in the upper pane, while the disk configuration of the current system is displayed in [Target Settings] in the lower pane. Select a volume in [Source Object] and drag and drop to the restore target volume or right-click the volume and select the restore target volume.

Please make sure that a volume is selected for restore. If you select to drag and drop the entire disk, dual disk configuration by RDR utility is deleted.
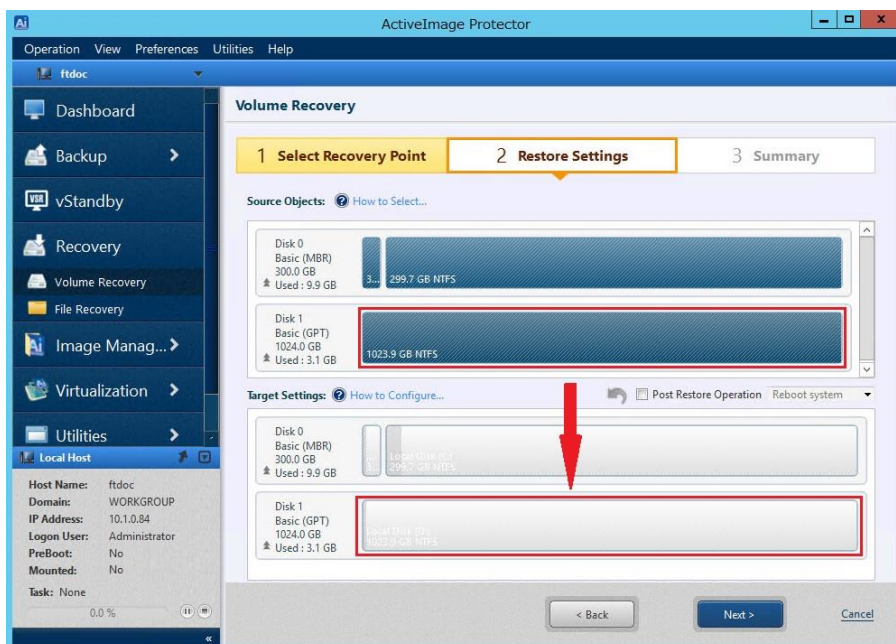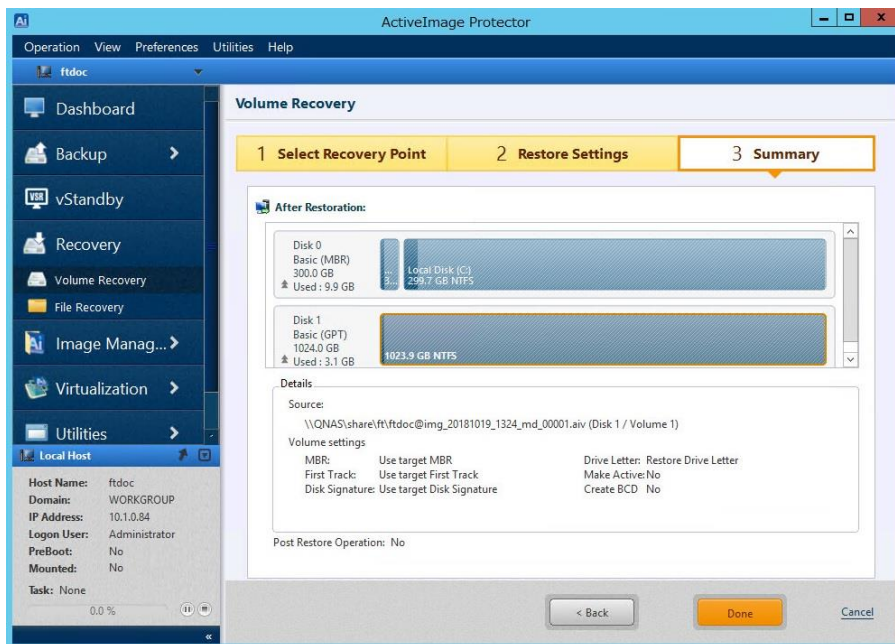

4) When the restore target is specified, the following window is displayed. Click [Next] button.
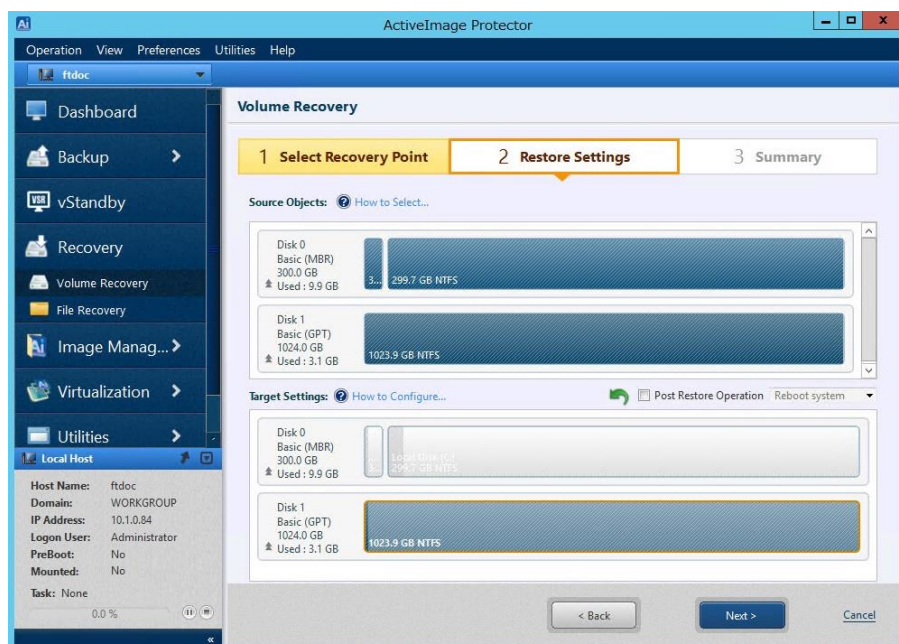
5) [Summary] page is displayed. Please review the settings for the restore source image file and the target disk to restore the image files. Click [Done] button to start restore task.

6) The progress bar indicates the progress of the executed restore task.

7) Upon completion of restore process, access the restored drive in Explorer and check the data. This is the end of restore operating procedures.

# Appendix: Recovery using Windows PE-based boot environment

There are advantages and disadvantages of using Windows PE-based boot environment.
Advantages: The devices, unrecognized as a result of loading drivers on Windows PE, can be recognized. Full features are provided including Restore to a volume of reduced size.
Disadvantages: Windows ADK must be configured in the system. Windows PE-based boot environment needs to be built in a media.

Bare Metal Recovery of System Disk and Data Disk

1) Before execution of restore process, the data in the target hard disks to restore and dual disk configuration should be entirely purged by executing physical format.

2) Before booting up Windows PE-based boot environment, please make sure that restore target disks are set in the slots of CPU/IO module 0. Then, plug off the power cord from the power outlet, remove hard disk from CPU/IO module 1 and start up boot environment.

3) Boot up boot environment from Windows PE-based boot environment media.

4) If you specified a network shared folder for the destination storage to save backup images, please specify the IP address and assign a network drive by selecting [Utilities] – [Network Config].
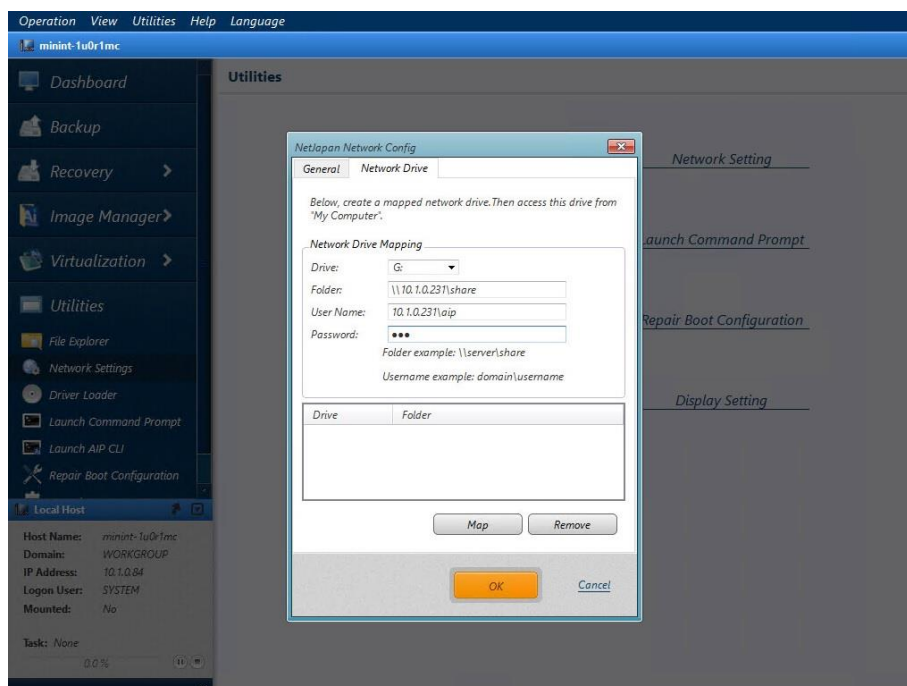
5) Select [Recovery] - [Volume Recovery]. Select a recovery point and click [Next].
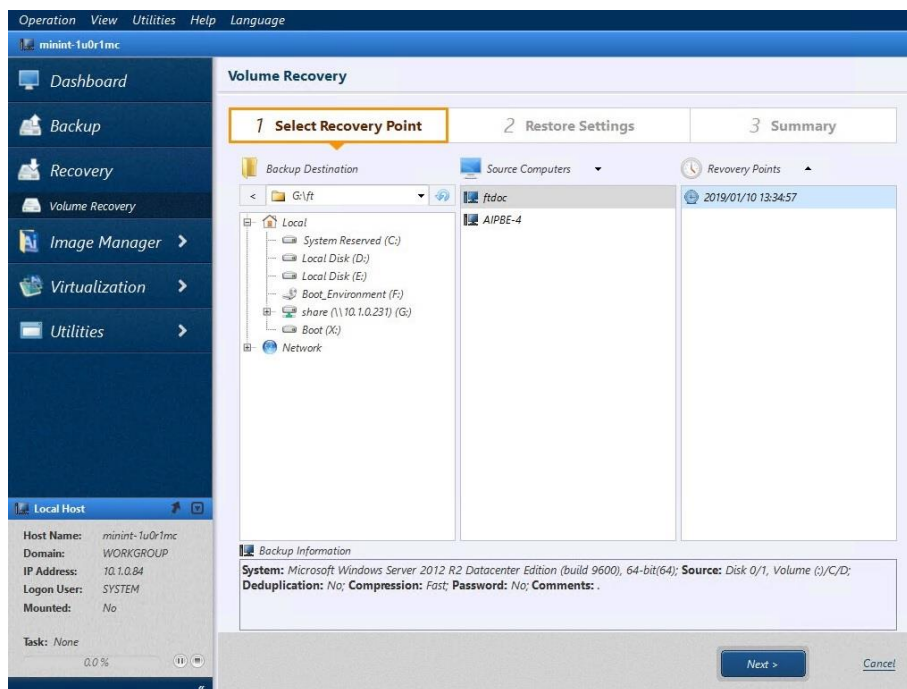
6) [Restore Settings] page is displayed. The contents in the restore source image file are displayed in [Source Objects] in the upper pane, while the disk configuration of the current system is displayed in [Target Settings] in the lower pane. Right-click the [Source Objects] and select the restore target. Click [Next].
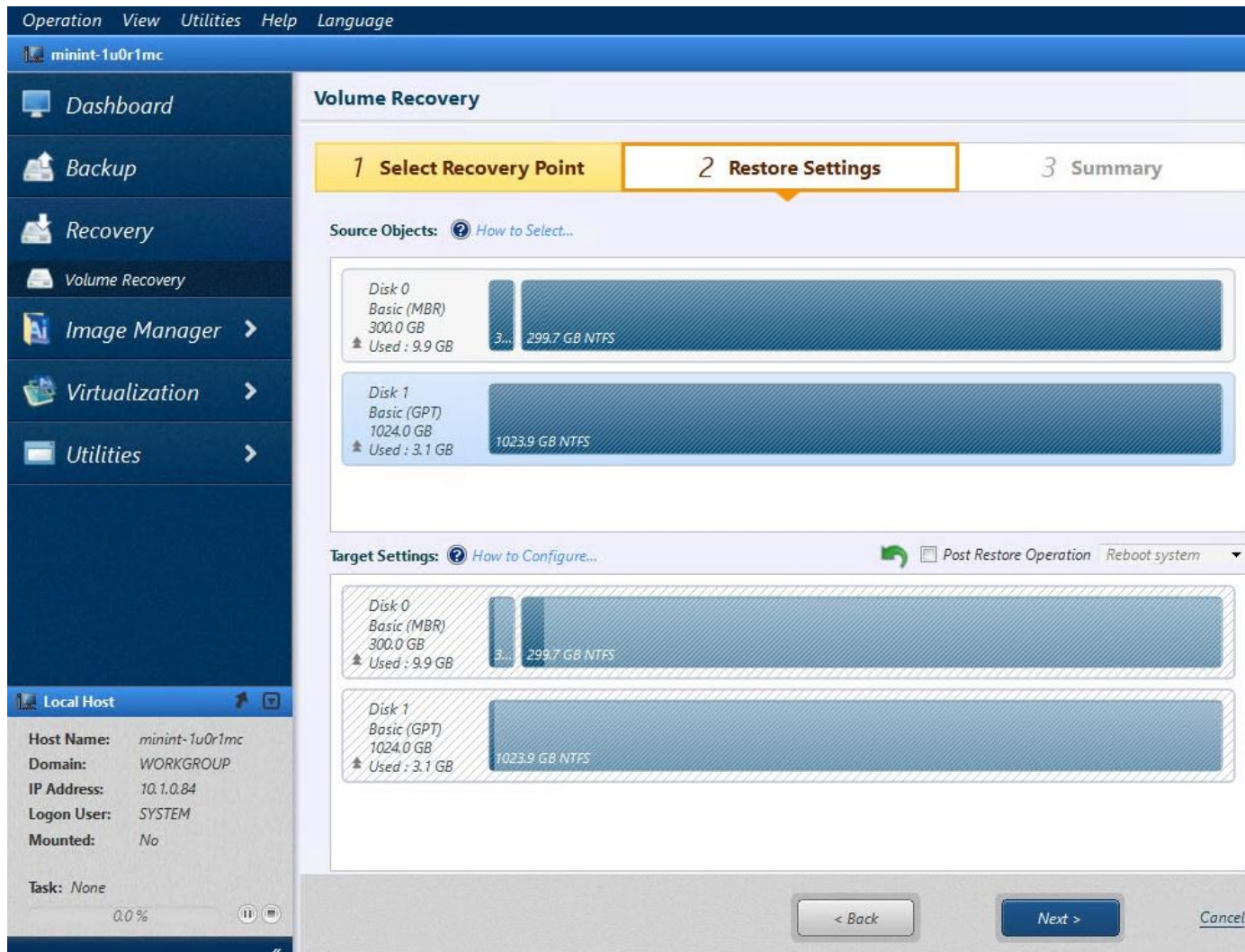

If you get the message saying "The restore target disk is larger than the backup source disk. Do you want to restore the respective volumes in extended size in proportion to the disk size?", please click [Cancel] button.

7) [Summary] page is displayed. Please review the settings for the restore source image file and the target disk to restore the image files. Click [Done] button to start restore task.
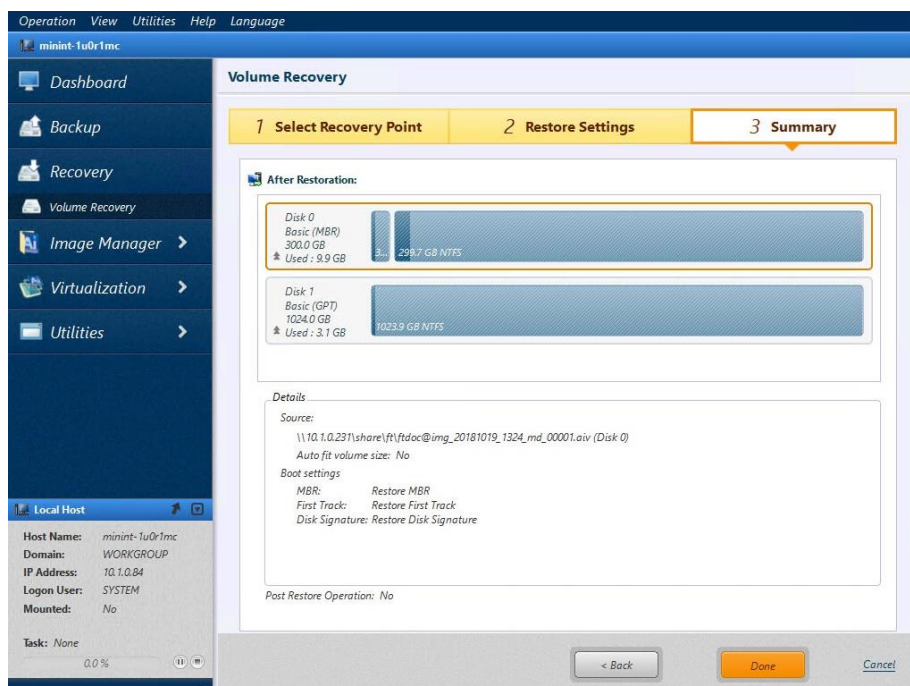

8) The progress bar indicates the progress of the executed restore task.
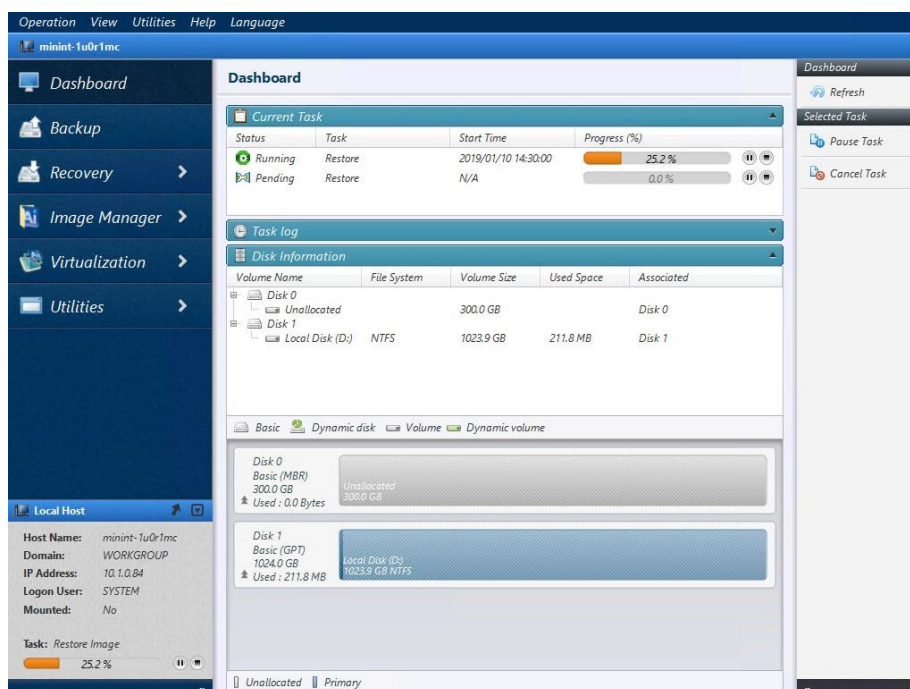
9) Upon completion of restore process, eject the boot environment media. Click [Operation] – [Finish] – [Shut down] to shut down the system.

10) Set the hard disk to CPU/IO module 1 and plug in the power cord to the power outlet.

11) Power on the computer.
   If you use R320e/R320f model, select the default setting in the BIOS menu.
    (BOOT Mode, XHCI Mode, OS Boot Monitoring)
    If you use R320g model, select the default setting in the BIOS menu.
    (OS Boot Monitoring)

12) Set dual disk configuration by using RDR utility again after Windows operating system is started. Launch RDR Utility and go to [PCI module 10] - [SCSI Enclosure] - [Slot 0] and monitor the status of the disk in the right pane.

   If the disk in [Slot 0] is in "Boot, Configured, Active, Imported" status, and if you use Express5800/ R320e, R320f, R320g model, please refer to [Chapter 1 Windows Installation] - [3.10 Set Dual Disk Configuration] in Installation Guide (Windows Version) to set dual disk configuration by using RDR utility. This is the end of restore operation and no further operating procedures are required to take.

   If the disk in [Slot 0] is in "Unconfigured" status, right-click [SCSI Enclosure] – [Slot 0], then click [Create RDR Virtual Disk] in the context menu.
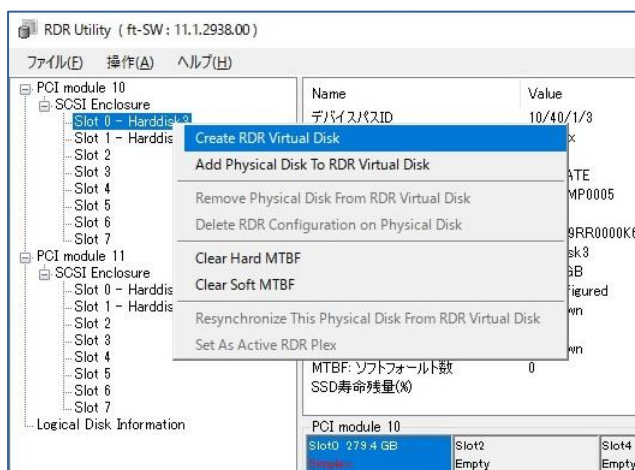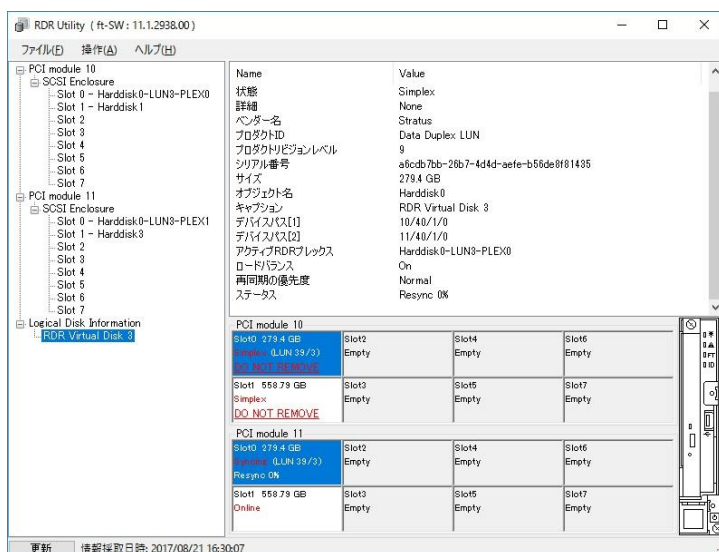

12) Click [Yes] to the message "To apply the changes, you may need to restart your computer. Are you sure you want to proceed with the further process?". Windows restarts following the above message.

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13) When Windows starts up, go to [Disk Management]. If the disk in CPU I/O module 0 is GPT formatted, the target disk in CPU I/O module 1 for dual disk configuration needs to be GPT formatted.
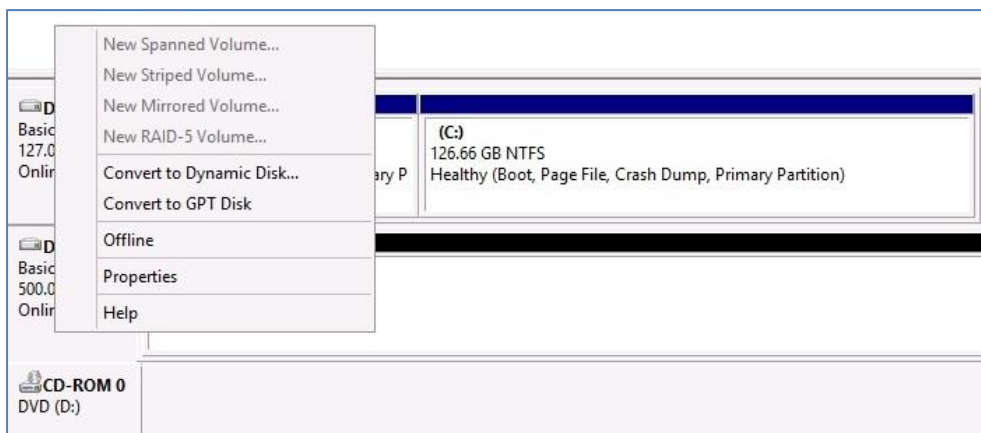
14) Launch RDR Utility, go to [PCI module 11] - [SCSI Enclosure] and right-click on [Slot 0], then click [Add Physical Disk to RDR Virtual Disk] in the context menu. You should get the message "Normally completed." Click [OK].
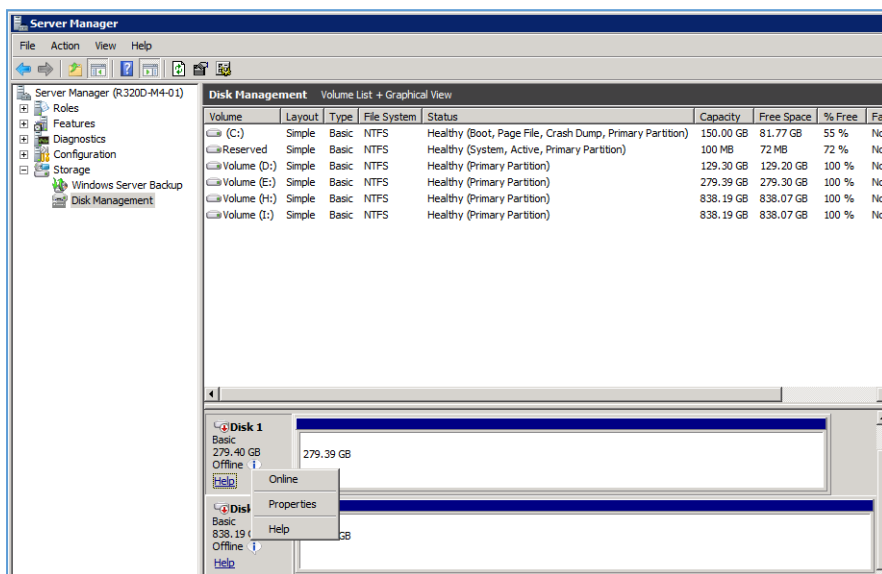
15) Go to [Logical Disk Information] and click on [RDR Virtual Disk x]. Please make sure that [Status] is [Resync XX%].

16) Now, set dual disk configuration on data disk. If you use Express5800/ R320e, R320f, R320g, please refer to Installation Guide (for Windows) and take the procedures of [Chapter 1 Windows Installation] - [3.10 Set Dual Disk Configuration] to set dual disk configuration by using RDR utility.

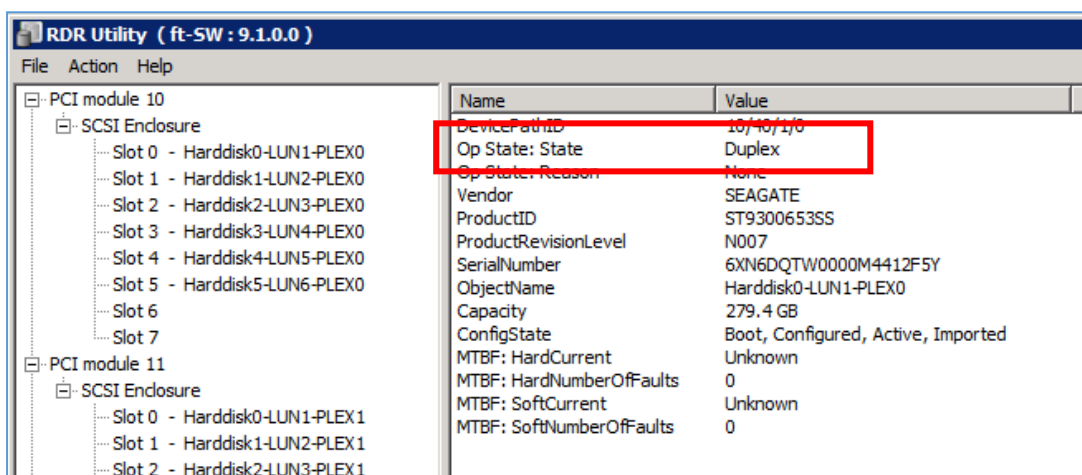Backup and Recovery of Windows system - User Guide

Notes:

● Depending on the server OS you use, and when data disks are restored in boot environment, the disks may be recognized as "Offline" on the restored Windows operating system. Go to [Server Manager] – [Storage Area] and toggle "Offline" status of appropriate disks to "Online". As for the volumes on data disk, you need to set them to "Online" and reassign the drive letters.

Restore System Disk

If you need to keep the data in data disk instead of purging them and restore system disk alone, please delete dual disk configuration on data disk by using RDR utility on operating system before starting restore process by using this product. The following are the procedures to delete dual disk configuration, as an example for deleting dual disk configuration on data disks in Slot 1 and Slot 2.
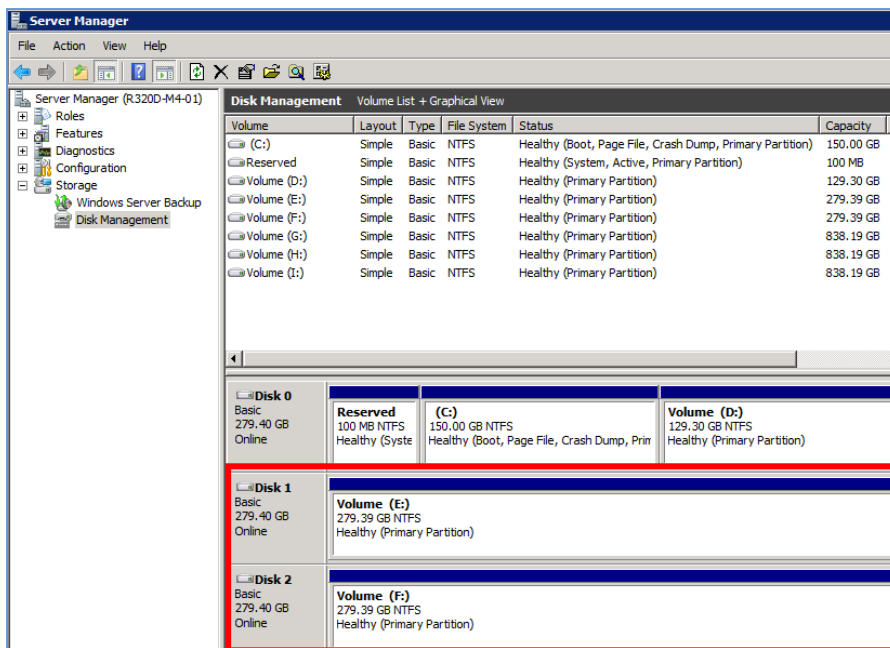
1) Go to [Start] menu – [All Programs] - [RDR] – [RDR Utility] and start RDR utility.

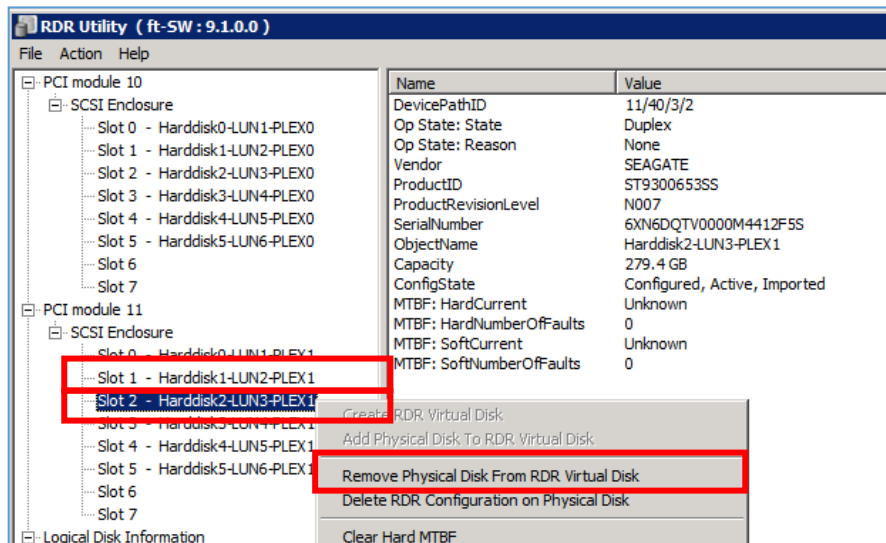2) Please make sure that the status of every physical disks on CPU/IO module 0 and module 1 indicates [Duplex].

3) Go to [Server Manager] – [Storage Area] on the operating system.

4) Please make sure that the status of data disks indicates as follows.
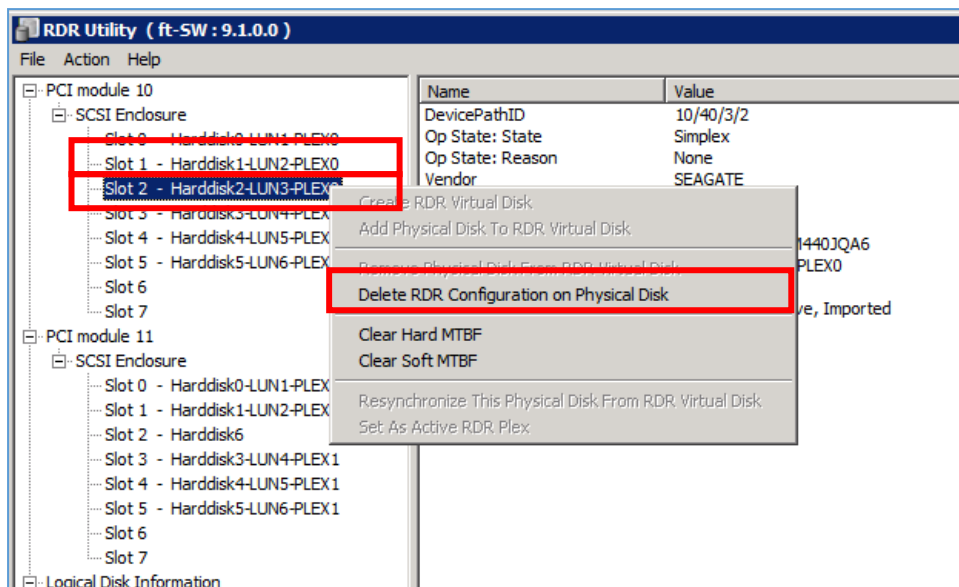

5) Launch RDR Utility and go to [PCI module 11] - [SCSI Enclosure], right-click on [Slot 1], [Slot 2], then click on [Remove Physical Disk From RDR Virtual Disk] in the context menu.
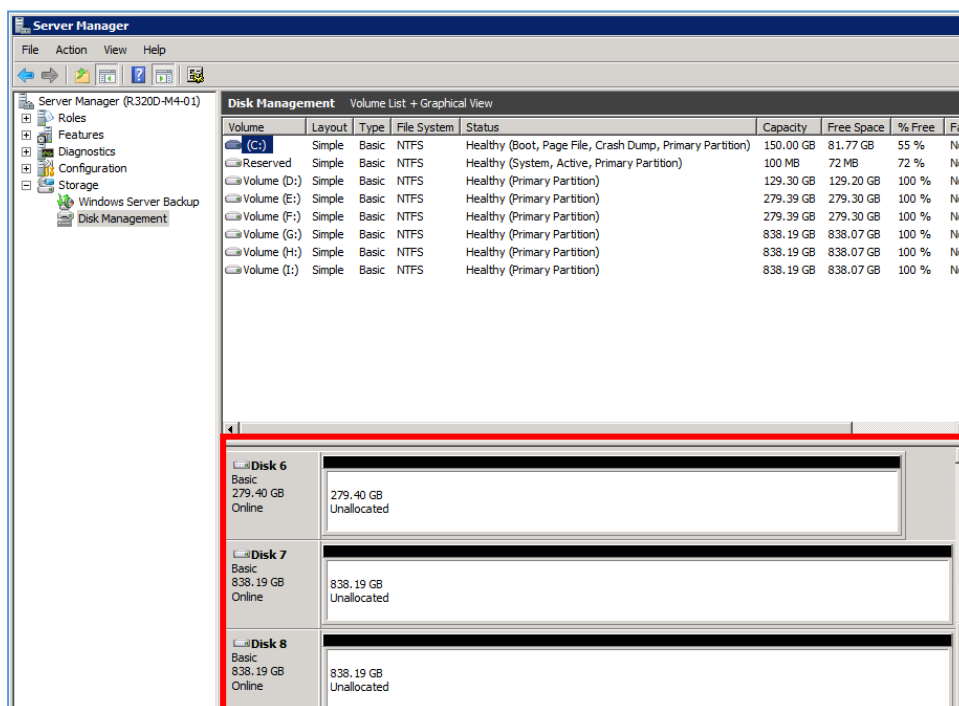
6) In RDR Utility go to [PCI module 10] - [SCSI Enclosure], right-click [Slot 1], [Slot 2], then click [Delete RDR Configuration on Physical Disk] on the context menu.
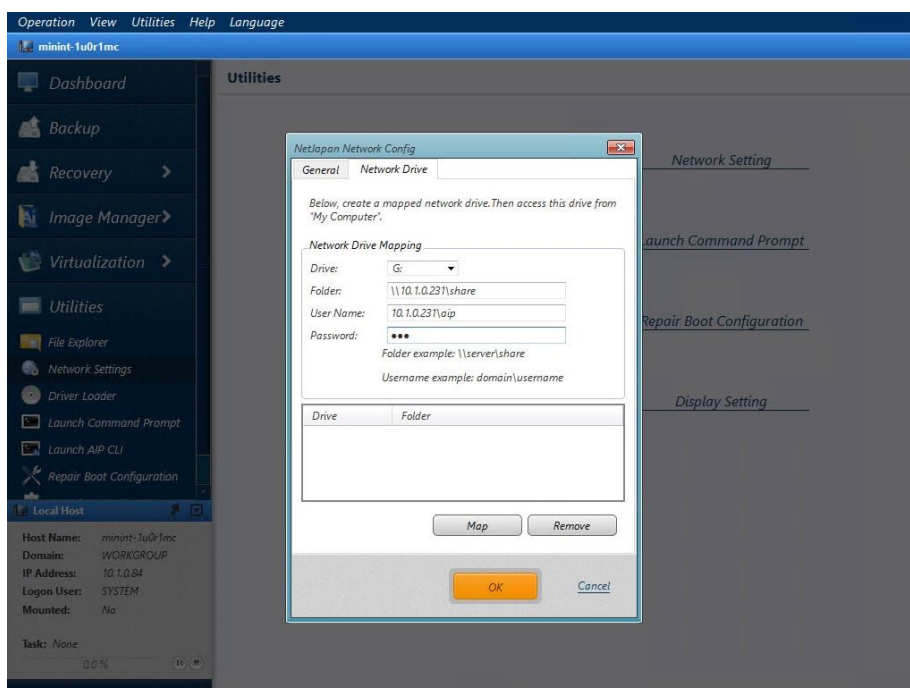

7) Go to [Server Manager] – [Storage Area] and see if dual disk configuration is deleted and the disk installed in CPU/IO module 1 is displayed as blank. Now, dual disk configuration is deleted by using RDR utility.

8) Shut down operating system and remove data disks from Slot1 and Slot2 of CPU/IO module 0.

9) Before starting restore process, the target hard disks (Slot 0 of CPU/IO Module 0 and Slot 0 of CPU/IO Module 1) to restore image files and to set dual disk configuration after restore process have to be physically formatted and the data on the target hard disks should be purged.

10) Before starting Windows PE-based boot environment, please make sure restore target disk is installed in the slot of CPU/IO module 0. Next, please plug off the power cord from the power outlet and remove hard disks from CPU/IO module 1 and then start boot environment.

11) Boot up Windows PE-based boot environment from ActiveImage Protector 2018 for Express5800/ft Server product media.

12) If network shared folder is specified for the destination to save backup image files, go to [Utilities] – [Network Config.], configure the settings for IP Address and assign a network drive.
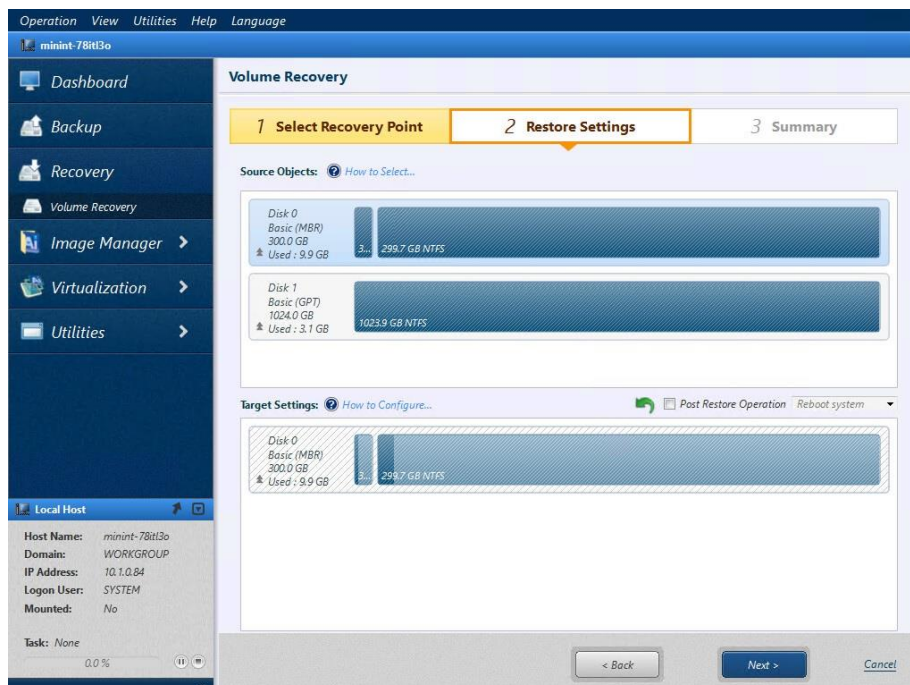
13) Select [Recovery] - [Volume Recovery]. Select a recovery point and click [Next].
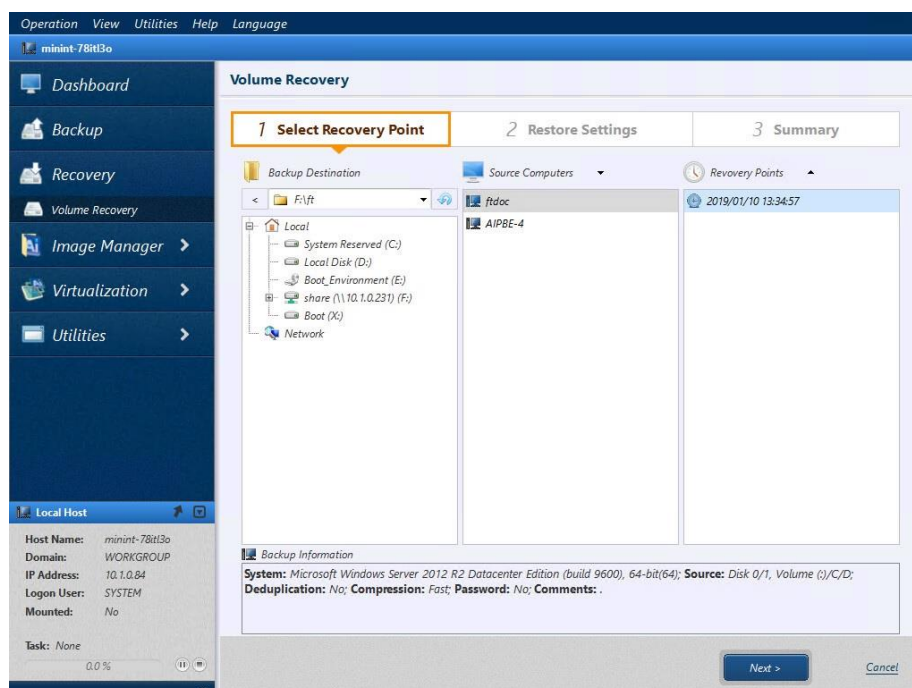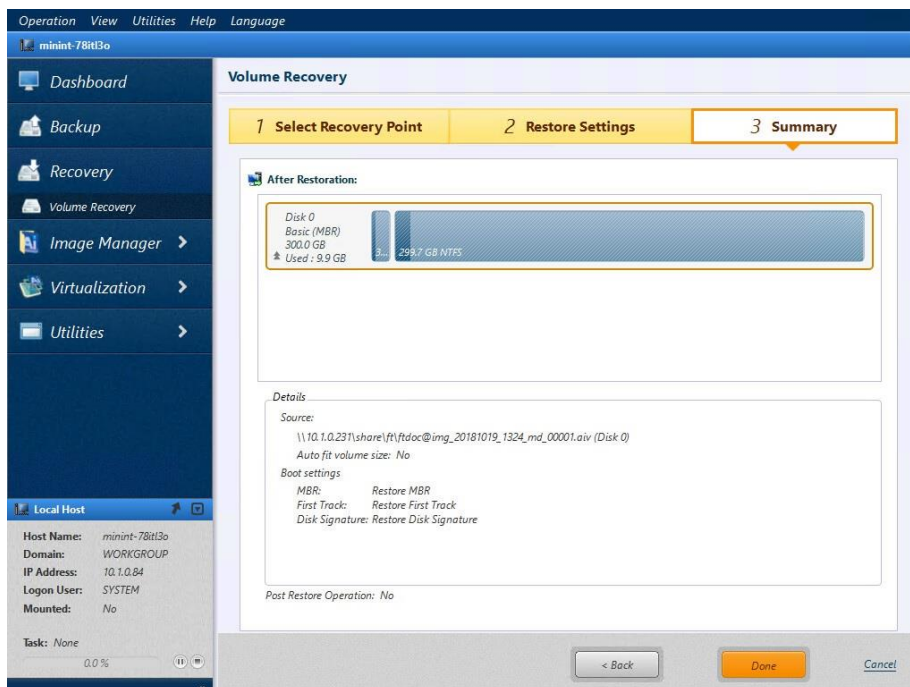

14) Select a volume in [Source Object] and drag and drop to the restore target volume or right-click the volume and select the restore target volume.
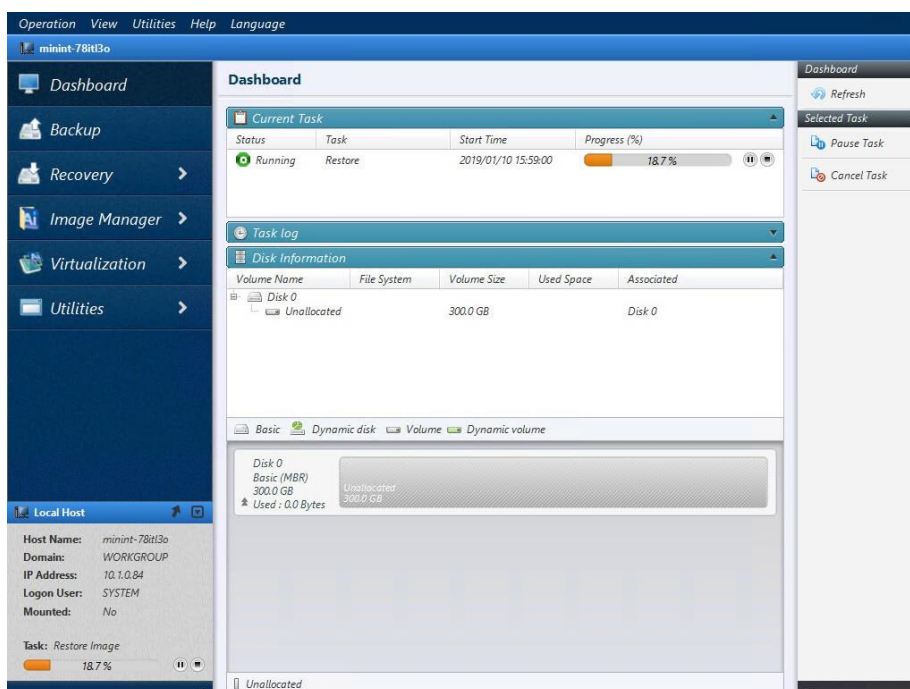 Click [Next].

15) [Summary] page is displayed. Please review the settings for the restore source image file and the target disk to restore the image files. Click on [Done] button to start restore task.

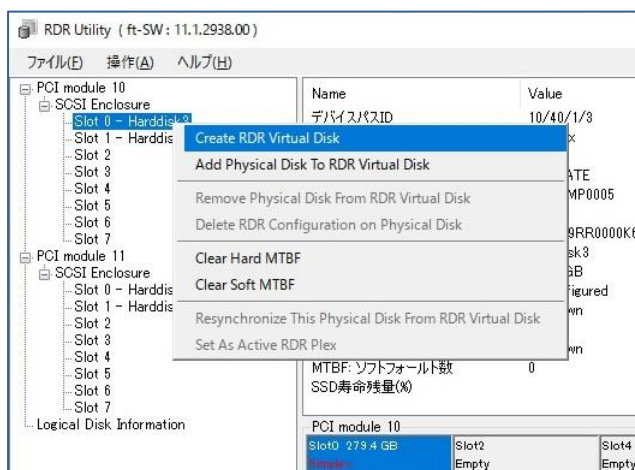16) The progress bar indicates the progress of the executed restore task.

17) Upon completion of restore process, eject the boot environment media. Click [Operation] – [Finish] – [Shut down] to shut down the system.

18) Set the removed disk back to CPU/IO module 0. Also, set the removed disk back to CPU/IO module 1 and plug in the power cord to the power outlet.

19) Power on the computer.
    If you use R320e/R320f model, select the default setting in the BIOS menu.
    (BOOT Mode, XHCI Mode, OS Boot Monitoring)
    If you use R320g model, select the default setting in the BIOS menu.
    (OS Boot Monitoring)

20) Set dual disk configuration by using RDR utility again after Windows operating system is started. Launch RDR Utility and go to [PCI module 10] - [SCSI Enclosure] - [Slot 0] and monitor the status of the disk in the right pane.

    If the disk in [Slot 0] is in "Boot, Configured, Active, Imported" status, and if you use Express5800/ R320e, R320f, R320g, please refer to [Chapter 1 Windows Installation] - [3.10 Set Dual Disk Configuration] in Installation Guide (Windows Version) to set dual disk configuration by using RDR utility. This is the end of restore operation and no further operating procedures are required to take.
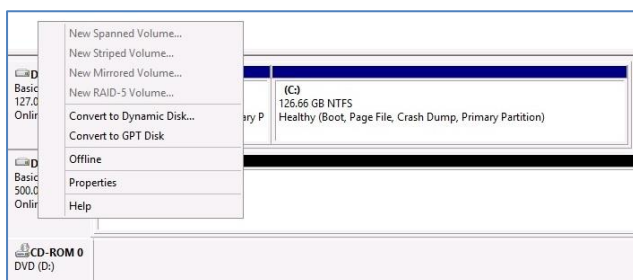
    If the disk in [Slot 0] is in "Unconfigured" status, right-click [SCSI Enclosure] – [Slot 0], then click [Create RDR Virtual Disk] in the context menu.

    Click [Yes] to the message "To apply the changes, you may need to restart your computer. Are you sure you want to proceed with the further process?". Windows restarts following the above message.

21) When Windows starts up, go to [Disk Management]. If the disk in CPU I/O module 0 is GPT formatted, the target disk in CPU I/O module 1 needs to be GPT formatted.
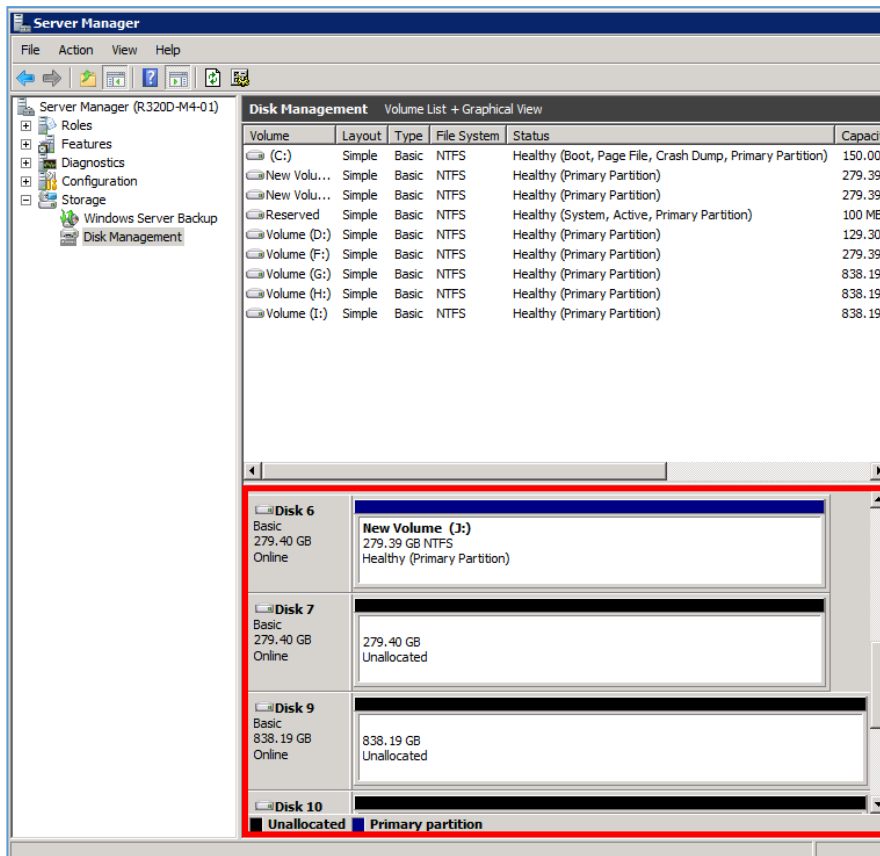

22) Launch RDR Utility, go to [PCI module 11] - [SCSI Enclosure] and right-click on [Slot 0], then click [Add Physical Disk to RDR Virtual Disk] in the context menu. You should get the message "Normally completed." Click [OK].

23) Go to [Logical Disk Information] and click on [RDR Virtual Disk x]. Please make sure that [Status] is [Resync XX%].
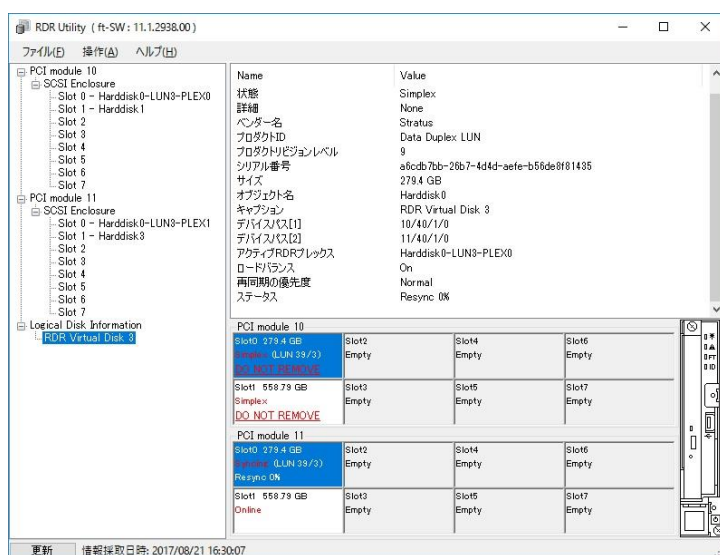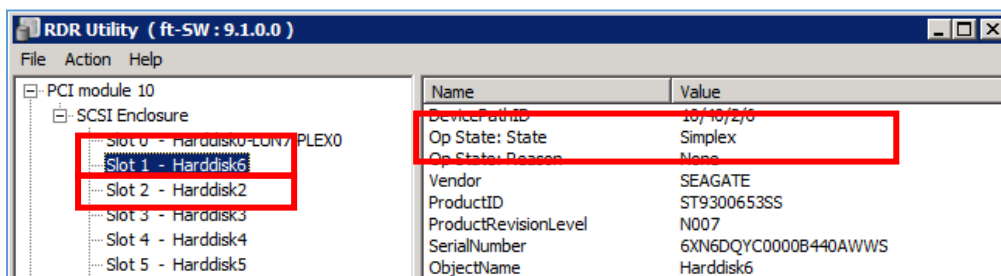
24) Now, set dual disk configuration on data disk. Go to [Server Manager] – [Storage Area] and toggle "Offline" status of appropriate disks to "Online".
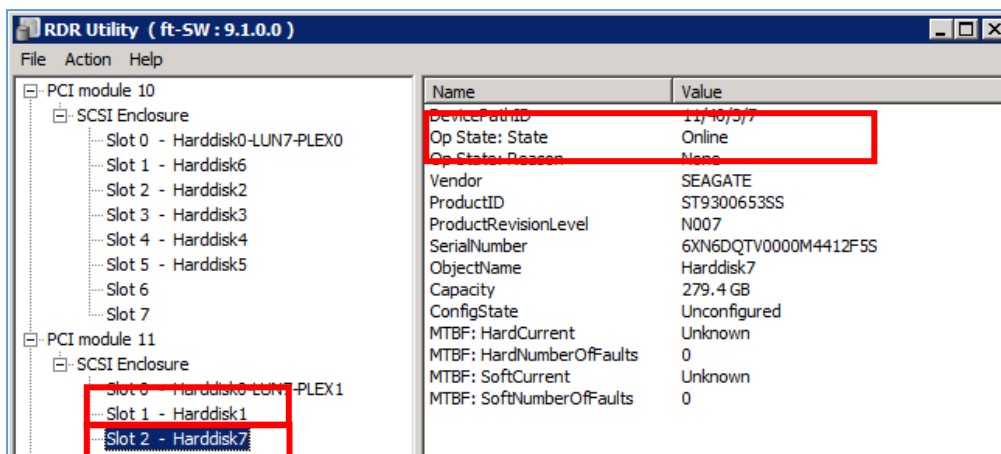

25) Launch RDR Utility, go to [PCI module 10] - [SCSI Enclosure] and make sure that the status of [Slot 1] and [Slot 2] are "Simplex".

Important

If the status of the above disks shows "Online" instead of "Simplex", please restart the operating system. After 5 minutes from restart of the operating system, launch RDR Utility and make sure that the status changes as shown above.

26) Launch RDR Utility and go to [PCI module 11] - [SCSI Enclosure]. Ensure that the status of the physical disks in [Slot 1] and [Slot 2] is "Online".

Important


If the status of the above disks shows "Simplex" instead of "Online", the disk may be installed in a wrong slot. Please make sure that the disk is installed in an appropriate slot and monitor the status of the disk again after reinstallation.

27) Launch RDR Utility, go to [PCI module 10] - [SCSI Enclosure], right-click on [Slot 1], [Slot 2] and select [Create RDR Virtual Disk] in the context menu.
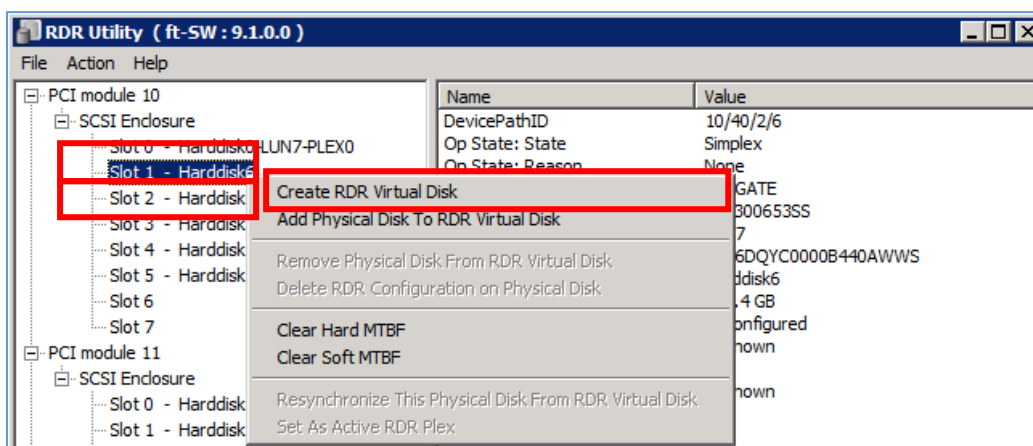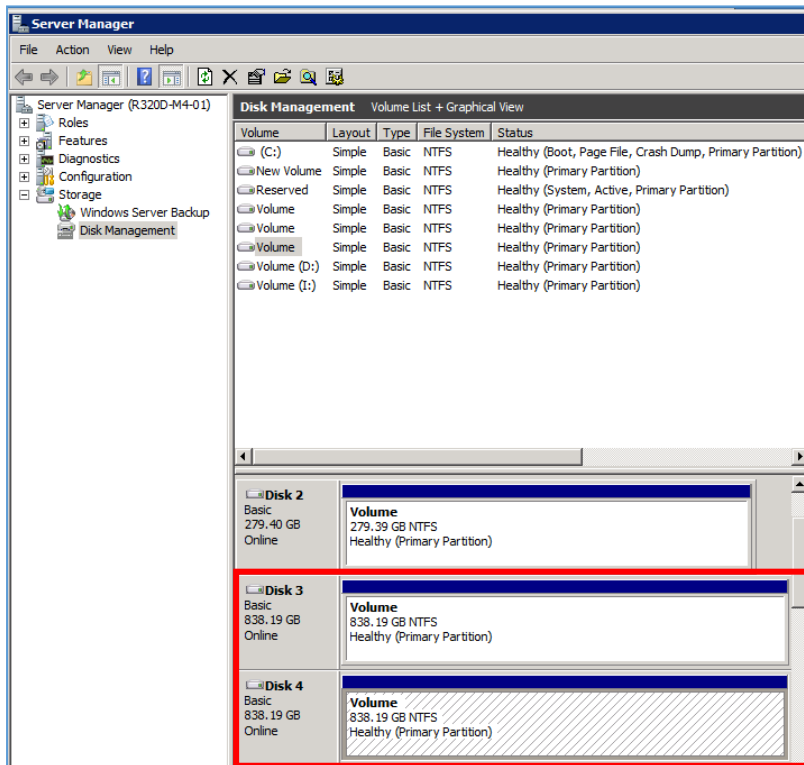
28) Go to [PCI module 11] - [SCSI Enclosure], right-click [Slot 1], [Slot 2] and select [Add Physical Disk To RDR Virtual Disk] in the context menu.
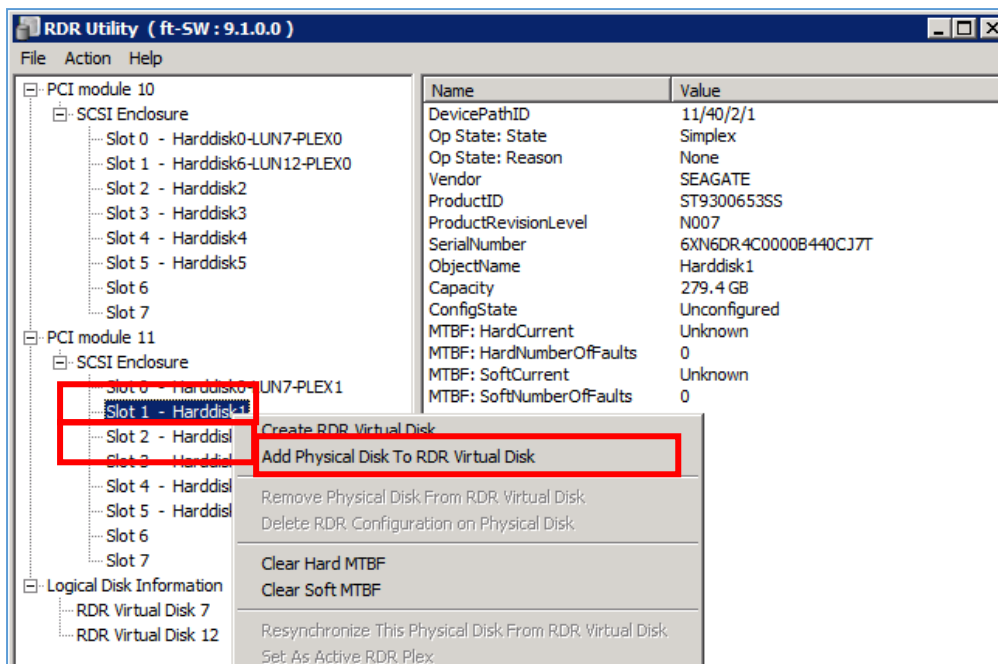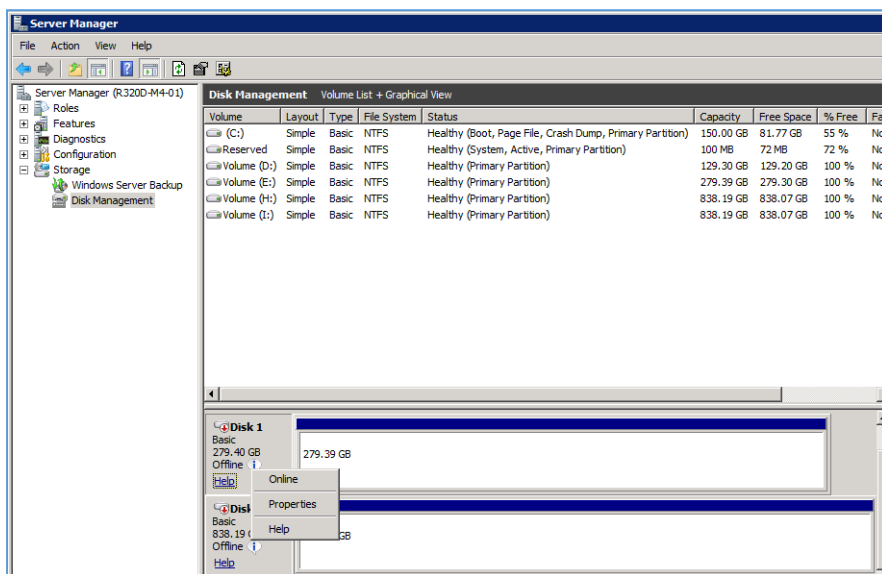

29) Go to [Server Manager] – [Storage Area] and monitor the status of the data disk. Toggle "Offline" status of the disk to "Online". If no drive letter is assigned or the assigned drive letter is not appropriate, please assign a correct drive letter.

30) Please make sure that the status of every physical disks on RDR Utility indicates [Duplex] and completed the synchronization.

Notes:

- Depending on the server OS you use, and when data disks are restored in boot environment, the disks may be recognized as "Offline" on the restored Windows operating system. Go to [Server Manager] – [Storage Area] and toggle "Offline" status of appropriate disks to "Online". As for the volumes on data disk, you need to set them to "Online" and reassign the drive letters.

＜For your reference＞

- Q: After reinstallation of 【ft Server/Windows】OS, the previously used data disks, when installed again, were not duplexed.

  A: Please visit: <https://www.support.nec.co.jp/View.aspx?NoClear=on&id=3150108390>