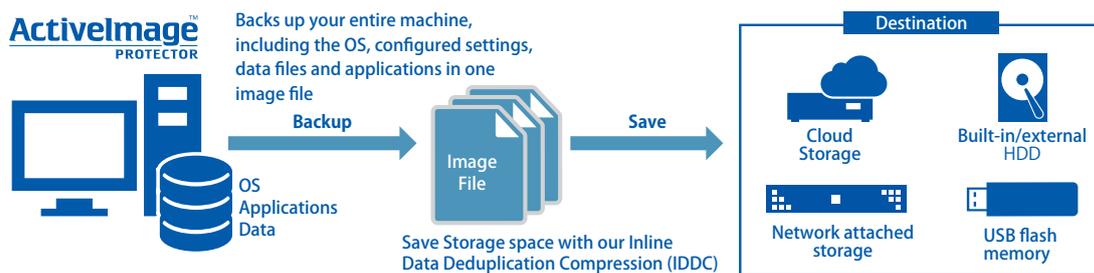


What is ActiveImage ProtectorTM?

Backup Solution

ActiveImage ProtectorTM is an image based backup and recovery solution that supports a variety of physical and virtual Windows and Linux environments. ActiveImage ProtectorTM backs up your entire hard disk, including the operating system along with all your applications and data in an image file. The backups are saved to any available storage location, including local hard disk, USB memory, network storage such as NAS, etc.



Disaster and recovery solution for virtual environment

ActiveImage ProtectorTM Virtual Edition includes the following:

- ActiveImage ProtectorTM Server Edition
- ActiveImage ProtectorTM Desktop Edition
- ActiveImage ProtectorTM Linux Edition
- HyperAgentTM

In this document, the following abbreviations of the edition names are indicated after the respective features.

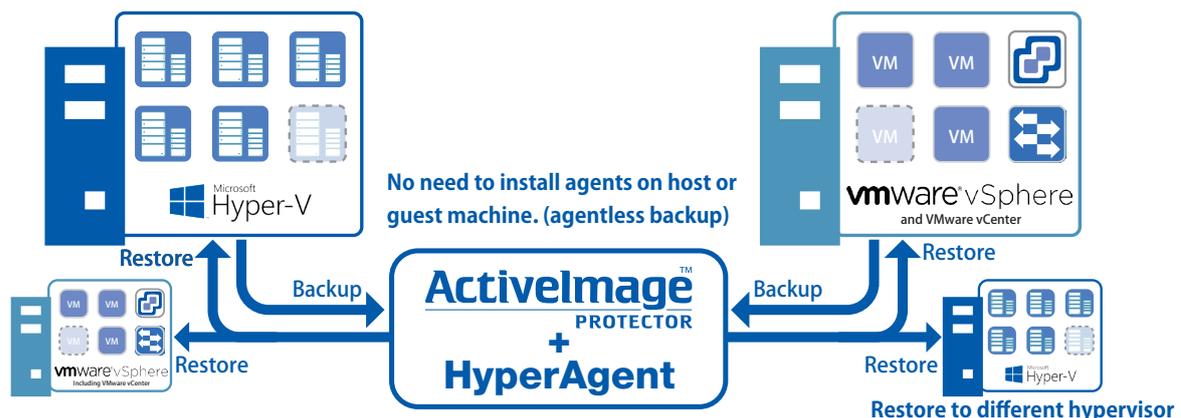
- **SE DE** : Only Server Edition / Desktop Edition provides the feature.
- **LE** : Only Linux Edition provides the feature.
- No mark : Server Edition / Desktop Edition / Linux Edition provides the feature.

The following licenses are offered for ActiveImage ProtectorTM Virtual Edition.

- Virtual Environment License
- HyperAgentTM Backup Option License
- Cloud Environment License
- Virtual Environment Single License for Public Cloud

“HyperAgentTM” Agentless Backup

ActiveImage ProtectorTM Virtual Edition includes “HyperAgentTM” feature. HyperAgentTM (agentless backup) backs up virtual machines without the need to install backup software on either the host or guest machines, minimizing the consumption of CPU and memory resources on host machines. HyperAgentTM eliminates time-consuming OS / data protection system implementation. Restore feature is provided to restore physical or virtual machine backups to dissimilar hypervisors. Agent-based backup feature is also provided to back up virtual machines by installing ActiveImage ProtectorTM agent.



Backup Feature

Image file based backup of the entire hard disk

ActiImage Protector™ backs up your entire machine, including the OS, configured settings, data files and applications in one image file. When disaster strikes, select a backup image to quickly restore for a fast and complete recovery.

Hot-Imaging backup for live machines

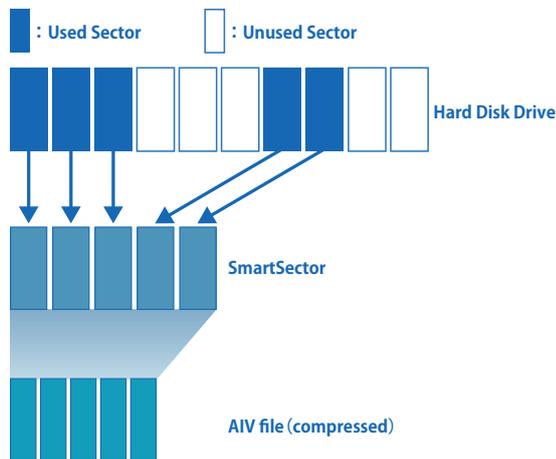
ActiImage Protector™ backs up your entire machine, including the OS, applications and data files, while the machine is active and running without stopping the services including database or open files. The hot-imaging backup is useful especially when backing up the system and the data frequently updated throughout the day and night on non-stop server.

Cold-Imaging backup for static machines

ActiImage Protector™ may be booted from the product media to create a backup image of a clean static system volume (immediately after installation of OS). Cold-imaging backup saving the point-in-time state of the failed system is convenient to examine the cause of the system failure.

Faster and smaller backup with Smart Sector technology

ActiImage Protector™'s Smart Sector technology only backs up the used sectors on a disk, resulting in faster backup and smaller backup files.



Encryption of Backup Images

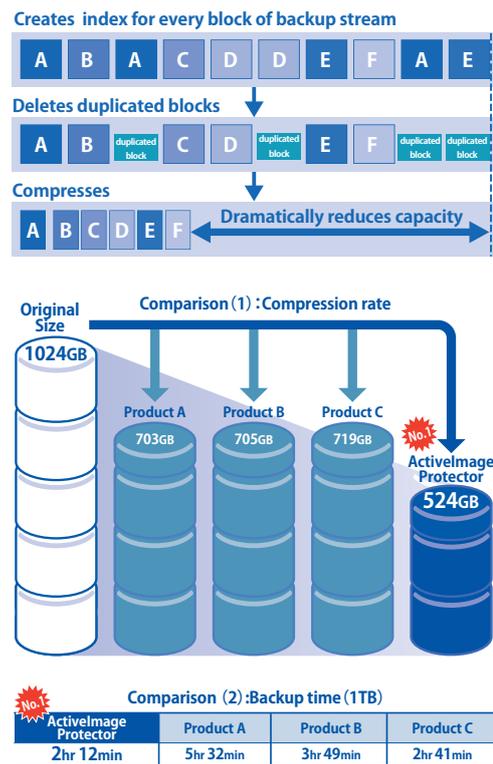
ActiImage Protector™ can create password-protected and encrypted backup images and supports up to 256 bit encryption.

Bad Sector Skip

In the event of a corrupt or failing disk, ActiImage Protector™'s Bad Sector Skip function will ignore bad or unreadable sectors, allowing you to back up and recover data in the remaining good sectors.

Save storage space with IDDC

Our Inline Data Deduplication Compression (IDDC) feature eliminates duplicate data while simultaneously compressing it, resulting in a significant reduction in backup storage requirements. Backup using IDDC does not increase the overall backup processing time (according to our test results: 27 hours to back up 11.7 TB data). You do not need to purchase an optional tool or an expensive storage offering Deduplication feature. No special configuration settings or operation are required.



Fast Incremental Backup

Fast and efficient incremental backup includes only sectors that have changed from the last backup. The incremental backup saves both process time and storage space. ActiImage Protector™ includes the proprietary change tracking filter driver for the fast incremental backup.

Base Backup			
	1st incremental file		
		2nd incremental file	
			3rd incremental file

Incremental Reconcile Feature (recurring incremental backup)

SE DE

ActiImage Protector™'s Reconcile feature allows you to continue an incremental chain even if previous incremental files are lost or corrupted.

USB SmartDetect SE DE

Automatically detects when your USB backup disk is not connected and will prompt you to resume your backups once the disk is reconnected. Even when multiple USB hard disks are specified as the destination to save backup images, USB SmartDetect feature can be enabled.

Smart Sector backup of Linux Ext 2 / 3 / 4 from Windows SE DE

In a Windows / Linux multi-boot environment, ActiveImage Protector™'s Smart Sector Technology can back up both Linux (Ext 2, Ext 3 and Ext 4) and Windows partitions from Windows.

Command line execution support

Most of ActiveImage Protector™'s features can be used by specifying parameters for command line tool or with command file. ActiveImage

Protector™'s CLI allows backups to be seamlessly administered by system management tools, if any, by using prepared script file.

A variety of Storage Media are supported

Save your backups to any available storage location, including NAS, SAN (fibre channel), USB, eSATA, network shared folders, etc.

Support for LVM Backup LE

Support for collective backup / restore of disks configured with Logical Volume Manager (LVM). This eliminates the process of configuring boot setting when restoring the system disk.

Backup Options

Schedule backup

Backup tasks can be automatically executed according to the onetime, weekly or monthly schedule, or a specific day of a week in a specific month. Also, you can schedule the first baseline backup and recurring incremental backup tasks to run subsequently.

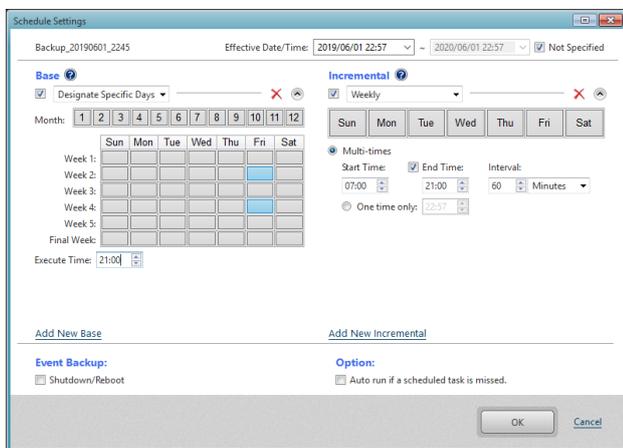


Image Retention Policy

The use of Retention Policy feature allows you to automatically delete the obsolete backup image set when the number of backup image sets reaches the preset limitation and reduce the storage space requirements.

Flexible Multi-Scheduling Feature

Multiple schedules can be defined for individual backup tasks. For example, you can create a new full backup each month for an ongoing Weekly Schedule backup task.

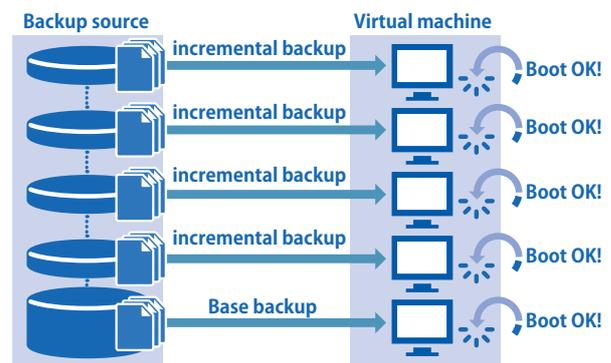
Post-backup Process

Runs BootCheck™(*), Replication and Consolidation tasks upon completion of a backup task or at a specified time.

*Only Server Edition and Desktop Edition provides BootCheck™.

Automated backup "bootability" testing : BootCheck™ SE DE

BootCheck™ provides confidence that your backup images are bootable on local or remote Hyper-V host. BootCheck™ boots up a virtual machine directly from a backup image file for quick bootability check, minimizing the resource consumption and start-up time. You can manually select ActiveImage Protector™ backup image for bootability check from the console at any timing.



Automatic backup at shutdown SE DE

Due to time constraints you might have missed the timing of backing up your system though you recognized the need. ActiveImage Protector™ supports automatic backup when a machine is shutting down and you are leaving the office every day.

Destination Isolation Option

Our new Imagelolate™ technology reduces potential malware or ransomware attacks by disconnecting access to a backup storage drives after backups complete.



*The screen image is captured from Server Edition.

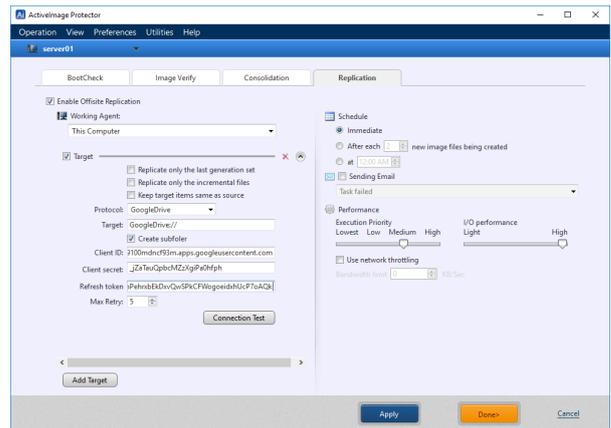
Scripting

Scripts can be implemented to run before and/or after snapshots are taken or after the backup image has been created. An example would be to execute a user-specified script to purge database cache before taking a snapshot and resume database after taking a snapshot (before starting a backup task), a script to copy / edit the created backup image file, etc. Scripts can be implemented respectively for a base backup and incremental backup tasks.

Cloud Storage Services are supported (Offsite Replication)

Replication target supports a Network Shared folder, FTP, FTPS, SFTP, WebDAV, Amazon S3, Azure Storage, OneDrive,

Google Drive, Dropbox.



* The screen image is captured from Server Edition.

Live Backup of MySQL

LE

MySQL is one of the most commonly-used, fast and easy to use open source database in the world. ActiImage Protector™ offers image-based backup of live MySQL databases without needing to shut MySQL down, ensuring consistency of data in the backup.

Live Backup of Cybozu Garoon

LE

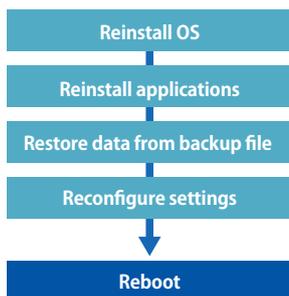
ActiImage Protector™ provides images-based backup of live Cybozu Garoon, ensuring consistency of data without stopping the groupware services, interruption or delay of the service.

Restore Features

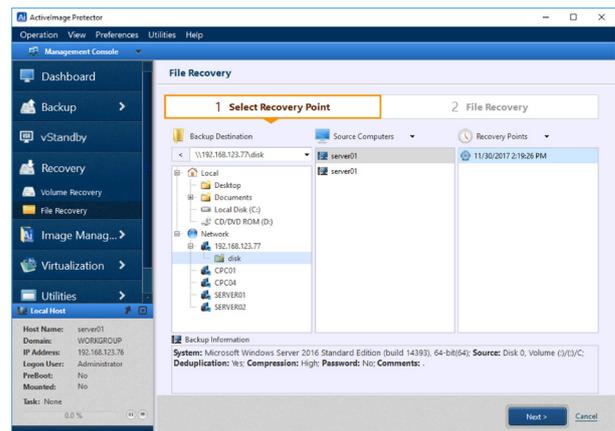
Fast and full-state recovery from disk image-based backup

In the event of a system failure due to hard disk failure, the traditional lengthy recovery process involved the reinstallation of OS and applications, data recovery, etc. ActiImage Protector™ is a sector-based disk imaging backup / recovery solution and the built-in wizards guide you through every steps to perform required operations for recovery from the backup image file. Select the most up-to-date incremental backup file and your system is restored to the most updated state.

General backup software



ActiImage Protector



* The screen image is captured from Server Edition.

Fast Bare Metal Recovery

ActiImage Protector™'s lightning-fast restore engine dramatically speeds up recovery time. Bare Metal Recovery provides capabilities for initializing and creating partitions on the bare metal disk.

File Recovery feature

In the event of a system failure, as is often the case, you may only need specific files to restore in order to restart your duties. File Recovery feature allows you to restore a specific file or a folder from a backup image file on ActiveImage Protector™'s GUI. Then, the stream information (*) and access rights assigned to files, which Copy File feature of Mount Image often fails to recover, are inclusively restored. *Only Server Edition / Desktop Edition supports recovery of stream information.

Linux Based Recovery Environment

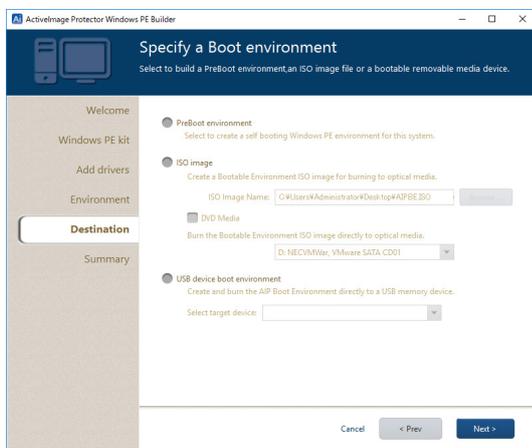
Perform faster disaster recovery and cold backups with ActiveImage Protector™'s Linux based boot environment (AIPBE) on DVD. AIPBE is built based on CentOS. This enable to recognize the latest device to use.

Windows PE Based Recovery Environment

ActiveImage Protector™ includes a Windows PE based boot environment builder that uses Windows AIK or ADK.

Boot from USB flash memory, USB hard disk drive, optical media or ISO file

ActiveImage Protector™ comes with boot environment builder for creating bootable media by selecting USB flash memory, USB hard disk, ISO image file or optical media as well as the product media. Boot Environment Builder allows you to add a specific device driver



in the bootable media, if you use a hardware of which driver is not included in the product media. If your note PC does not come with an optical media drive, the use of bootable USB flash memory or USB hard disk drive offers bare metal recovery option. Bootable USB hard disk drive may provide you with a partition allocated for saving user data.

Pre-Boot Recovery Environment

This feature creates a boot environment directly on your hard drive on a tablet PC that does not come with an optical media drive or USB port, allowing you to boot the recovery environment without the need of an external device or optical drive (not available for the free version of Hyper-V Server or Server Core).

Architecture Intelligent Restore

A.I.R.* can restore virtual and physical machines from ActiveImage Protector™'s backup image files to different hardware. A.I.R. can also restore entire disks and/or selected volumes.

*A.I.R. (Architecture Intelligent Restore) can restore and migrate virtual to / from physical machines.

Repair Boot Configuration

Recovery of BCD in MBR is supported on boot environment. In case that you failed to back up boot partition in the partition table, or that restored "C:" drive alone failed to boot up the system, the use of "Repair Boot Configuration" tool enables to restore BCD for the restored system to be bootable.

Shrink On the Fly

ActiveImage Protector™ provides Shrink on Restore for NTFS volumes. NTFS volumes can be restored to disk drives that are smaller than the original disk. The minimum requirement is that there is enough space on the smaller drive to restore the amount of actual data of the original volume.

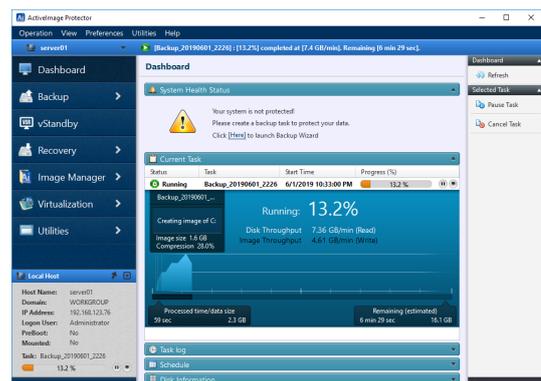
Enlarge or reduce target volumes or partitions during recovery

NTFS volume may be restored to a volume in specified size larger or smaller than the source volume (NTFS volume only).

Operation

ActiveImage Protector™'s GUI provides tools for efficient operations

ActiveImage Protector™'s GUI provides dashboard window enabling real time monitoring of the status of tasks, logs, schedules and disk information. Backup / Restore wizards windows make the software operation more intuitive.



*The screen is captured in Server Edition.

Remote File Explorer

Built with File Explorer for selecting files / folders. Remote File Explorer allows you to browse files and folders from your image files

in network shared folders on remote clients just in the same manner as on local computer.

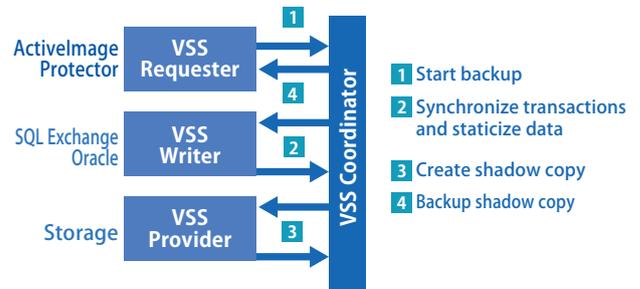
Snapshot Driver

Standard Snapshot Driver (Volsnap) SE DE

ActiImage Protector™ uses Microsoft's standard Volsnap snapshot driver. No additional drivers need to be installed.

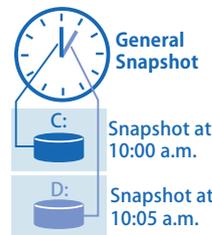
Backup of VSS-aware server applications SE

Create consistent backup of Microsoft VSS (Volume Shadow Copy Service)-aware server applications such as SQL Server, Exchange Server and Oracle.

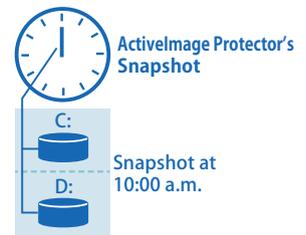


Point-in-time multi-volume snapshots SE DE

ActiImage Protector™ offers superior recoverability of databases spread across multiple volumes by taking a point-in-time snapshot of all volumes at the same time, thus ensuring consistency and recoverability. If database spanning across multiple volumes, backup by volume causes the inconsistency of the data in the backup images due to the difference in starting times between the backups. Restoring inconsistent backup images results in an inconsistent database. ActiImage Protector™ solves this problem by taking a point-in-time snapshot of all the volumes.



When the snapshot of database index file is created for every volume, the backup among volumes is not synchronized.



The snapshots of all volumes can be created at a time.

Virtual Environment Support

Enhanced support for virtual environments (V2P, V2V & P2V) SE DE

ActiImage Protector™ provides the virtualization from physical machines to virtual machines (Hyper-V, ESXi) or vice versa. The virtualization process includes the installation of the driver required for booting the virtual machine.

P2V (physical to virtual) conversion directly to virtual environments SE DE

P2V conversion supports Hyper-V or VMware vSphere as the target host to create the virtual machine attached with a converted virtual disk, enabling to immediately boot up the virtual machine.

Virtual conversion utility SE DE

Virtual conversion utility is provided to convert a backup image file to virtual disk bootable as virtual machine. Conversion to the latest virtual disk format, VMware VMDK, Hyper-V VHD, VHDX is supported.

P2V (physical to virtual) conversion directly from hard disk SE DE

P2V conversion feature supports direct conversion from a hard disk to a virtual disk bypassing P2V conversion from an image file which saves the process time.

Virtualization Adapter SE DE

The driver for virtual machine can be injected into the current image file, which is saved as the differential file (.aix) of ActiImage Protector™. The differential file may be restored to a virtual machine.

Support for P2V (physical to virtual) disk on Windows PE SE DE

Conversion from physical to virtual disk (conversion to virtual disk only) is supported in Windows PE-based boot environment.

Image Management

Image Explorer SE DE

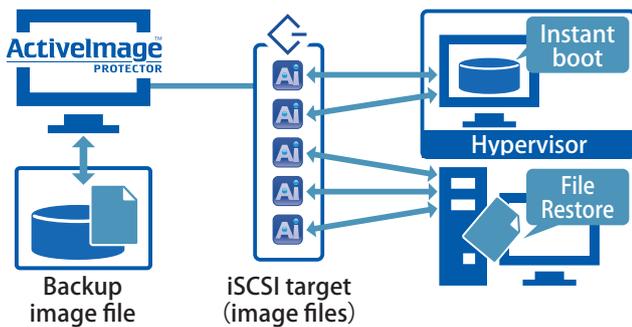
Installed as a Windows Explorer extension, Image Explorer allows you to browse and copy files and folders from ActiveImage Protector™ image file without requiring a full image mount, saving your time and system resources. This will allow you to restore individual files or folder.

Image Mount (Granular File and Folder Recovery)

ActiveImage Protector™ can quickly mount an image file as a drive, allowing you to extract any files or folders contained in the image file. When image file is mounted as a writable drive, the changes made on the drive will be saved as differential files.

iSCSI Serves Backup Image Files as iSCSI Targets SE

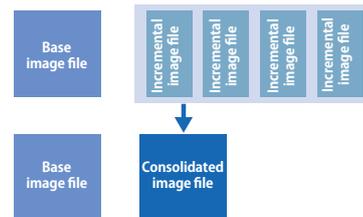
ActiveImage Protector™ now utilizes iSCSI to serve backup images as iSCSI targets to any local or remote iSCSI initiator for mounting backup images as local disks; not only providing a method to recover



files and folders from a backup, but provides immediate booting of a backup image attached to a virtual machine on hypervisor. Additionally, using VMware vMotion streamlines the recovery process by seamlessly migrating live virtual machines booted from the iSCSI disk to a hypervisor in a production environment.

Consolidation of Backup Files

Consolidate incremental backups into a single incremental file to save storage space and for easier management.



Archive Backup Files

Use the archive (unification) feature to unify a full base image file and all associated incremental files into a single backup file.



Remote Management

Push install for easy backup agent distribution SE DE

Push Install feature is designed to install ActiveImage Protector™ agents and console on remote computers over a network. Using the built-in Network Discovery feature, you can discover target computers and enter the product key for the selected installation package. You can also get a list of computers from Windows Active Directory or push install the programs to remote multiple computers.

Client management console for easy administration of backup agents

The use of client management console enables to manage ActiveImage Protector™ agents installed on remote computers.

- You can monitor the status of remote agents over the network, start execution of backup tasks from console and establish connection to remote console.
- One-click offers execution of scheduled backup tasks on remote network computers.
- Free evaluation version of Actiphysy software installed on remote network computers can be upgraded to a full product version from console.

Instant recovery solution

Creates virtual standby replica (VSR) (vStandby™) SE DE

ActiImage Protector™ integrates vStandby™'s features to replicate your physical / virtual machines (virtual standby replica) directly to an VMware ESX/ESXi or Hyper-V host, up-dating boot points with scheduled incremental snapshots. When a disaster strikes, the virtual standby replica (VSR) can be instantly started (in two minutes according to our test result).

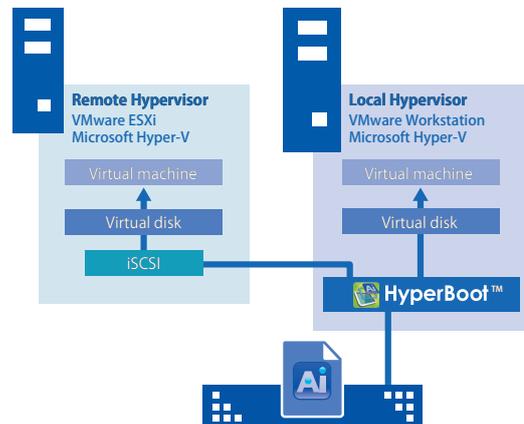
vStandby AIP™ for Instant Disaster Recovery SE DE

Use our vStandby AIP™ solution in combination with ActiImage Protector™ to create a standby virtual machine directly from your backup images. When disaster strikes, you can instantly boot a standby virtual machine from any incremental boot point made before the system crashed, bypassing conversion and recovery process – giving you true Instant Disaster Recovery!

HyperBoot™ add-on to immediately boot backups images as virtual machines

Use our free HyperBoot™ add-on to boot ActiImage Protector™ backup image files as a fully functional virtual machine in only a few minutes in

local and remote Microsoft Hyper-V, VMware ESXi, VMware Workstation Pro / Player, Oracle VirtualBox. HyperBoot™ serves as an interim replacement server to bridge the gap between disaster and recovery. Using VMware vMotion streamlines the recovery process by seamlessly migrating live virtual machines booted in vCenter to a hypervisor in a production environment.



Others

Supports the latest version OS, uEFI compatible motherboard SE DE

The latest versions of Windows OS and Windows Server OS and Linux distributions are supported. Backup and recovery features support GPT disk in uEFI boot system.

Supports the latest files systems SE DE

The latest file systems including ReFS (Resilient File System), CSVFS (Cluster Shared Volume File System), etc., and Storage Space, 4K sector disk are supported.

* Only Server Edition supports CSVFS.

Support for Smart Sector Backup of XFS system volume LE

ActiImage Protector™ supports the smart sector backup of XFS system volume which is used on Red Hat Enterprise Linux and CentOS.

Support for hardware RAID

Backup / recovery of hardware RAID is supported.

Monitor task log entries in Windows Event Log Viewer SE DE

Every task events are now recorded in the Windows event log to provide better integration into the Windows Management Interface for a more unified experience.

Enhanced License Management Feature SE DE

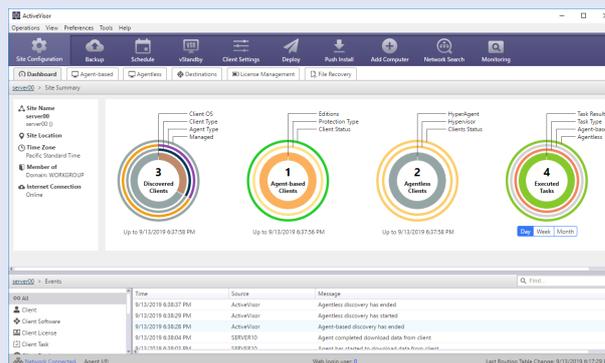
Supports ActiveVisor™'s license management. With no internet communication the enhanced license management feature allows the software activation, reviewing license information, the software update, etc.

Email Notification

Email notification can be sent (using SSL/TSL) to an email address of your choice. Notifications include successfully completed backups, backup failure, or in the event that AIP encounters an error, a restart or failure. Email notification may be set to inform you of the summary of task execution and license status (expiration of the license period).

Central Management Console “ActiveVisor™”

ActiveVisor™ provides a centralized solution for managing and monitoring ActiveImage Protector™ clients. ActiveVisor™ collects data from remote clients (agent-based ActiveImage Protector™ and agentless HyperAgent™) over network, provides graphical and statistic representation of the data, monitors the status of ActiveImage Protector™ clients / backup status / destination storage and deploys the backup task / schedule templates. ActiveVisor™ enables system administrators to manage and monitor ActiveImage Protector™ clients from any location, reducing the burdens on the system administrators.



Agentless backup feature “HyperAgent™”

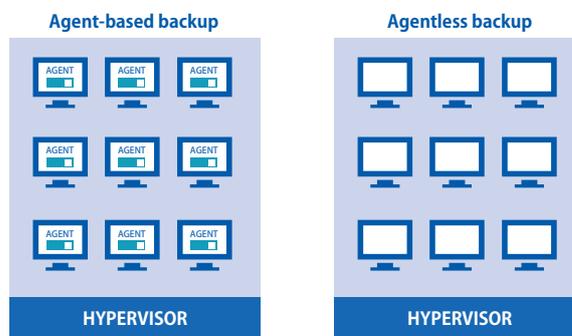
ActiveImage Protector™ Virtual Edition provides the following four features of HyperAgent™ without the need to install agents on either the host or guest machines.

- Backup virtual machines (HyperBack™).
- Restore physical or virtual machine backups to dissimilar hypervisors (HyperRestore™).
- Create and maintain standby virtual machines from backup images for instant switch-over. (HyperStandby™)
- Restore a specific file from agentless backup images.

No Software Agent Installed on Guest!

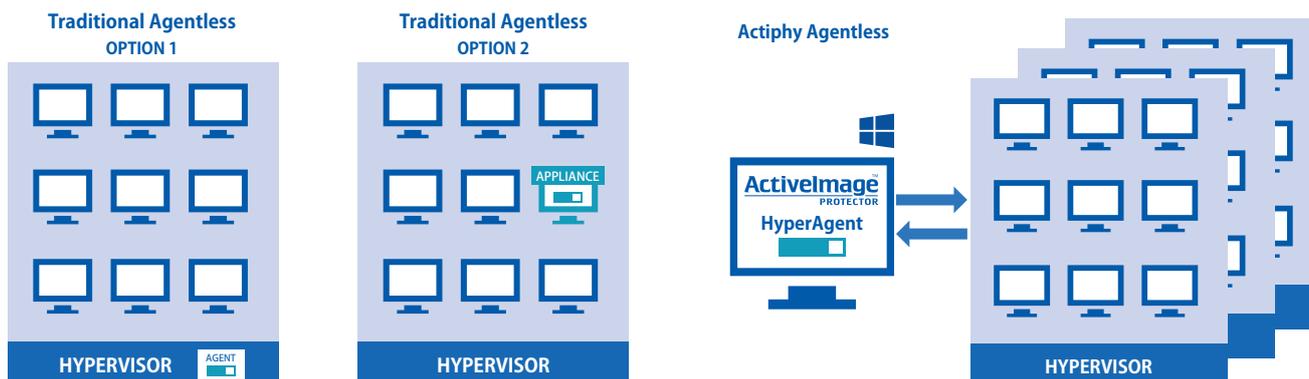
Traditional agent-based backup installs a backup agent on all virtual machines. In agentless backup, no backup agent is installed on the virtual machines.

Difference between agent-based and agentless backup



No agent Installed on Host!

So far, agentless backup either required an agent installed or a software appliance on the hypervisor. Actphy's agentless backup requires no software agent in any form on the hypervisor.



Minimizes the Use of CPU and Memory Resources

The HyperAgent™, installed on a remote machine, runs the tasks minimizing the consumption of CPU and memory resources on host and guest machines.

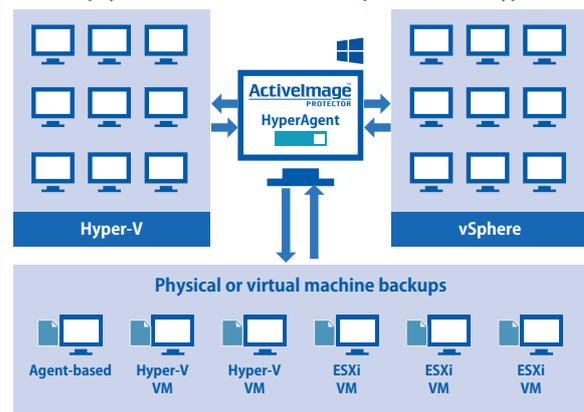
Incremental backup of virtual machines on Hyper-V host

ActiPhy's proprietary VHDX Block Delta (AVBD) technology makes incremental backups of VMs without the need for an agent or driver installed on the Hyper-V host. Using RCT (Resilient Change Tracking) of change block tracking for Hyper-V VM, backup of second-generation virtual machines on Windows Server 2016 Hyper-V host is supported.

HyperRestore™ (Restore feature)

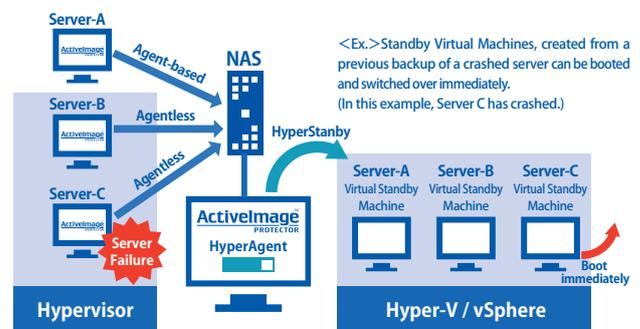
Restore VMs from agent-based / agentless backup image files to the same or different hosts, or across different hypervisors.

Restores physical or virtual machine backups to dissimilar hypervisors



HyperStandby™

Uses HyperStandby™ (same as ActiPhy's vStandby AIP™ technology) to create and maintain standby virtual replica from backup images for instant switch-over. When a disaster strikes, the virtual standby replica (VSR) can be instantly started (in two minutes according to our test result).



Agentless Backup gains additional benefits from IDDC

Collective agentless backup of multiple VMs gains additional benefits from ActiPhy's Inline Data Deduplication Compression (IDDC).

File Recovery from agentless backup

Specify a file from an agentless backup and restore to a specified folder.

License offering for ActiImage Protector™ Virtual Edition

The following licenses are offered for ActiImage Protector™ Virtual Edition.

- Virtual Environment License
- HyperAgent™ Backup Option License
- Cloud Environment License
- Single Virtual Machine License for Public Cloud

Virtual Environment License

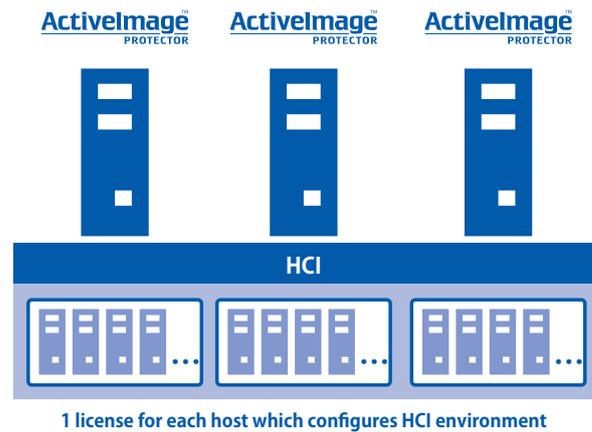
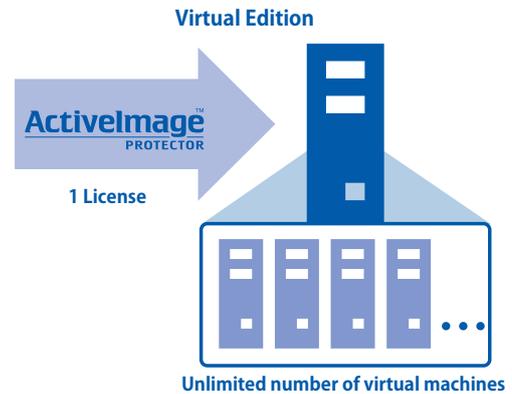
When the traditional license is applied to virtual environment where server/clients exist, an argument about the effectiveness of virtual environment arises that "the cumbersome license management outweighs the benefit of virtual environment where you can flexibly increase or reduce the number of virtual machines, and furthermore, the license cost itself is not reduced." On top of it, if using Linux system, additional license is required. ActiImage offers Virtual Environment License. You can use one licensed copy of ActiImage Protector™ Virtual Edition on one virtual environment host. There are no restrictions on the number or the types of virtual machines running on a single validly licensed virtual environment host.

There are no restrictions on the number of CPU sockets or cores, the size of backup source volume, etc. You do not have to purchase additional license for Linux system. ActiImage's Virtual Environment License provides outstanding cost performance.

You can install ActiImage Protector™ on the virtual machines respectively to use agent-based or agentless backup feature of HyperAgent™.

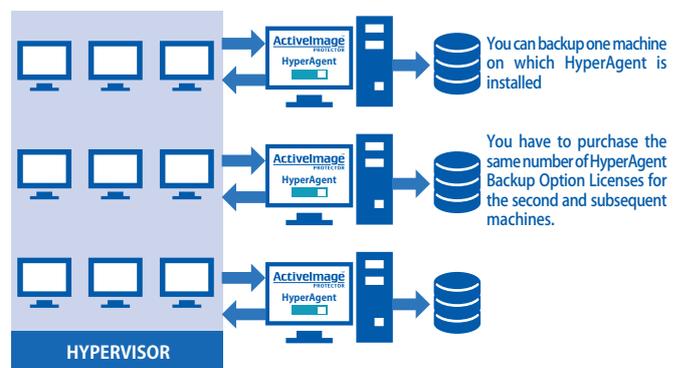
There is no limitation to P2V conversion to the validly licensed virtual environment host.

*In HCI infrastructure, you need to purchase the same number of licenses as the hosts configuring HCI.



HyperAgent™ Backup Option License

HyperAgent™ can be used on multiple number of machines at the same time. If you perform agentless backup for "the second and subsequent machines using HyperAgent™", you need to purchase the same number of HyperAgent™ Backup Option Licenses as the second and subsequent machines.

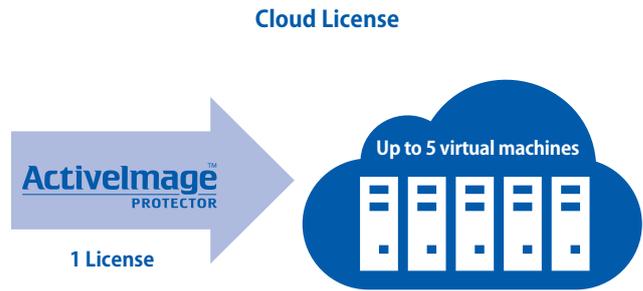


Cloud Environment License

~One license covers five virtual machines in a cloud environment~

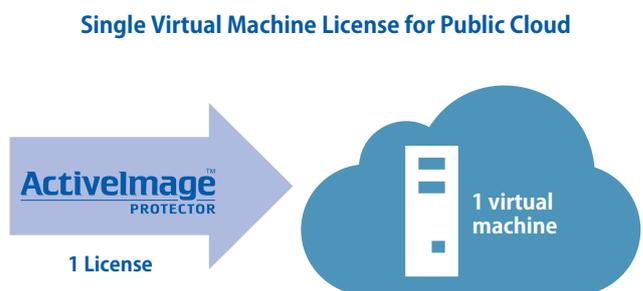
Backup and recovery for servers in a Cloud environment requires a license designed to charge license fees based on the number of virtual machines instead of physical machines. Virtual machines in Cloud environments are not hosted on a specific virtual environment host but may migrate from host to host within that Cloud. Also, the number of virtual machines on a host may dynamically change. Under these circumstances, the traditional license system covering a specific server or virtual environment host cannot be applied to Cloud environment.

Actiphy offers Cloud Environment License. You can use one licensed copy of ActiveImage Protector™ Virtual Edition for up to five virtual machines in a Cloud environment. Cloud Environment License covers up to five virtual machines dynamically hosted on unspecified virtual environment host in public cloud environment. There is no limitation to the specifications of virtual machines, the volume of virtual disk, etc. You can install ActiveImage Protector™ on the respective virtual machines.



Single Virtual Machine License for Public Cloud

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