Replay 4

Important Release Notes

Build 4.7.40160 and above

This document outlines a several important notices that you should be aware of before you install, configure and begin using Replay 4.7. For important information regarding how to prepare your system before installing Replay, we encourage you to download and review the installation guide located at http://kb.appassure.com.

New Features

- **Volumes Integrity Check** - Replay Core will have the option to perform volumes integrity check operation on the latest Recovery Point during the nightly job and identify unhealthy snapshots within a core repository. The volumes integrity check will validate that the NTFS file system of the snapshot is in a consistent state.
- **Replay Recovery Console (RRC) Enhancement** - The RRC has the following improvements:
  - Updated RRC user interface.
  - Ability to create a 64-bit BootCD.
  - Ability to create a bootable USB flash drive.
  - Better driver injection experience
  - Ability to view the restore progress in the recovery console
  - Improved disk management
- **64 bit Outlook Support for MailRetriever** - MailRetriever will now be able to use the 64-bit version of Microsoft Outlook to perform item level restores of mailbox data.
- **Improved SMTP settings for Alerting** - SMTP configuration includes new settings for SSL and port information.
- **Ability to customize Reporting Banners** –The Banners in Replay Reports can now be customized

- **Admin Console Improvements**
  - 64 bit support
  - Performance improvements: Recovery Point loading
  - Machine Name field default when adding Agent to protection
- **Reporting Enhancements**
  - Reporting Database Retention Policy
  - Volume Integrity Check Report
- **Virtual Standby Features**
  - Ability to specify Network Interface and Virtual Standby hostname
  - Custom post processing script on first boot

Deprecated Features

- **Hyper-V Cluster Shared Volume Support** – AppAssure is fully committed to support of Microsoft Hyper-V CSV support. It is an integral part of the AppAssure strategy for Windows platform support. We are in the process of re-architecting the design for support of Hyper-V CSV

clusters and will be re-releasing the feature in an updated version.

- **Physical Standby of Volumes** – Physical Standby is a feature that mirrors data volumes. Since data mirroring does not fall in our sweet spot of backup and recovery. We carefully evaluated the benefit of the feature and decided to deprecate it.

4.7 Upgrade Considerations

Version Compatibility

The Replay Core must have the same or higher version than the Replay Agents. A newer version of the Agent will not be compatible with an older version of the Core. The Replay 4.7 Core, on the other hand, is backwards compatible with Replay Agents down to Replay 4.6 Rollup 2. All Replay Agents prior to 4.6 Rollup 2 will require the Agent to be upgraded to 4.7.

The Replay Admin Console must be at the same version as the Replay Core.

If Replication is configured on the Core, the Target Core (DR side) must have the same or greater version than the Source Core. The Source Core upgraded to 4.7 must also upgrade the Target Core to 4.7. When replicating, we recommend upgrading Source Core prior to Replay 4.6 Rollup 2 to Replay 4.7.

Virtual Standby

As a best practice, when a virtual environment is managed using a vCenter, users should not manage VMs by connecting vSphere client directly to the ESX(i) host. Bypassing vCenter and configuring ESX(i) host directly may cause VM settings issues. When enabling Virtual Standby, it is advisable to follow the aforementioned guideline.

4.7 Upgrade Instructions

Prior to upgrading the Replay Core, pause snapshot transfers for all protected Replay Agents. Also ensure that there are no transfers occurring during the upgrade process. A snapshot transfer during an upgrade process may render the recovery point chain inconsistent and therefore may trigger a Base Image or Resync to occur after the upgrade, or for errors and exceptions messages to display initially after the upgrade.

Note: If the Replay Agent is uninstalled and re-installed, a Base Image will occur after the upgrade. Uninstalling and re-installing the Replay Core will also cause a Base Image to occur after the upgrade.

Upgrading the agent to this release will require the agent machine to be rebooted.

To upgrade Replay, follow the steps below:

1. Before starting the upgrade, stop the snapshots for each protected server. To do this, from the Replay Admin Console, select the agent on the list under the core and select ‘Stop…’.

2. All exports (Virtual Standby, Rescue Image) if set to be continuous should be stopped.
3. Replication should also be suspended. From the Replication tab select the Protected Server in the Outgoing Replication list, and select the Actions button to suspend it.
4. Stop the Replay Core Service.
5. Upgrade the Replay Core by performing an in-place upgrade. Choose "Upgrade Replay Core" in the installation setup menu. Step through the Installation Wizard to complete the upgrade process.
6. Upgrade the Replay Agent by performing an in-place upgrade. Launch the setup executable on the agent and choose "Upgrade Replay Agent" in the setup menu. Once the agent upgrade is complete, the Replay install will ask for the machine to be rebooted. Alternatively, use the 'Push Agent' feature to upgrade the agents. To do this, right-click on the Core name in the tree on the left in the Replay Admin Console on the Core. If the Push Agent feature is used, the check box to automatically reboot the agent should be selected, or if not chosen, the machine will be rebooted manually.
7. Once the Replay Agents are upgraded and rebooted, and the Replay Core is upgraded, resume snapshot transfers, exports and replication from the Core for the Agents. The upgrade process is now complete.
8. For Exchange 2007 SP1, the Exchange 2007 VSS writer may drop from the list of writers and have issues creating snapshots. This is due to a problem fixed by Microsoft in Exchange SP1 Rollup 5. To avoid this, install Exchange SP1 Rollup 5.

Installation Considerations

- **Virus Scanners:** When installing the Replay Core on a machine with a Virus Scanner, the Recovery Point mount point directory, "C:\Replay Recovery Points", and the Replay Repository directories should be excluded from the scan. An example Replay repository name is "E:\TevoRepository".
- **SQL Permission for SQL Attachability Check:** The SQL attachability check requires that a local instance of SQL is installed on the Replay Core. Please see this KB4130108 for details.
- **Volume Integrity Checks on Windows 2003 and SQL Server:** The Volume Integrity Checks may indicate errors due to a Microsoft chkdsk issue. Please see KB4610041 for details.
- **Single Mailbox Level Restores:** Single mailbox level restores require Outlook to be installed on the Replay Core. Replay 4.7 now supports 64-Bit Microsoft Outlook.
- **Multi-CPU Cores on Replay Core Machine –** When implementing concurrent snapshots with Deduplication it is recommended to use multi-core CPU's.
- **vSphere API's -** Currently, the paid ESXi license allows read-write access to the VSphere API's. The minimum license is the VMware vSphere 4.1 Essentials Kit for 3 host + 1 year subscription ($611 US on VMWare website). ESX(i) Virtual Standby does not support the free version of ESXi because API's are read-only on the free version and do not enable the creation VM's on them.

Issues Resolved in 4.7

- Problems setting up Virtual Standby on Replicated Core.
- In some cases, restore to alternative server fails.
- Sending email alerts fails if the username consists of an email address.
- Depending on the command arguments, replayc /list may not properly display Recovery Points.

- Windows Explorer may crash when repository is accessed.
- Domain name longer than 15 characters cannot be entered for authentication.
- System Health showing failed jobs when Exchange Database and Logs are on different volumes.
- Virtual Standby often performs a full export.
- ESX(i) export creates multiple folders during export.
- ESX(i) export fails to configure in a clustered ESX(i) environment.
- ESX(i) export fails to configure a distributed Network Switch in ESXi 5.0.
- Retention Policy reverts back to default when Agents are part of a cluster.
- Agent may fail to identify GPT volumes.
- Machine name field is the default field when protecting an Agent (Feature Request).
- Encrypt Virtual Standby Credentials (Feature Request).
- When agent goes offline during a snapshot, the transfer status bar does not update in the console.
- Driver injection on Windows 2003 does not handle .inf files with multiple dependencies.
- When performing Checksum checks and Volume Integrity Checks, the nightly jobs may fail under a heavy load.

Known Issues

- Hyper-V exports to a Windows Share may timeout. **WORKAROUND:** Perform Hyper-V exports to a local volume.
- Recovery points are not correctly shared between nodes in a single-copy cluster if one or both nodes are identified by their fully-qualified domain name (FQDN) or IP address. **WORKAROUND:** when protecting single-copy cluster nodes, add the nodes to Replay using their NETBIOS names exclusively.
- Replay cannot restore mount point information.
- Mail store and volume rollbacks to Exchange 2007 CCR clusters require some manual steps to complete successfully. See the section Exchange 2007 CCR Issues for details.
- Rollbacks performed with the Restore button don't display recovery points if protected server is offline. **WORKAROUND:** Select the recovery point to roll back from the Recovery Points list, right-click it, and choose Restore.
- Replay may generate unmountable recovery points when protecting the following volume types:
  1) Windows Server 2003 basic disk converted to simple dynamic.
  2) Basic disks created under Windows Server 2003 and mounted on Windows Server 2008.
- Delete Snapshots operation runs even if replication is in progress. This will be resolved in a future release.
- Mailbox restore may error after an advanced export. This will be resolved in a future release.
- Mailbox may error when opening after differential restore. This will be resolved in a future release.
- When the network is busy, the message 'AARecvN: Select timed out after 300 seconds while reading=4 bytes may appear in the events. This has no effect on operations.
- The error ''Failed to mount epoch' with 'The service has not been started.' may appear in the events after an upgrade. **WORKAROUND**: A reboot may clear this error.
- UNC path names containing spaces or dashes may lead to an unsuccessful VM export.
- When protecting a machine that is an Exchange CCR node, the Exchange options may not be presented in the Replay Admin Console. This may be due to a misconfiguration of the CCR paths within AD.

- "A socket exception occurred while attempting to retrieve the copy/consume job status" error appeared randomly in one case while consuming recovery points. This will be resolved in a future release.
- Differential export update may display a full green line for status on the Summary tab although the export is still in progress. This will be resolved in a future release.
- From time to time Upgrade closes Windows Explorer, the task bar and explorer.exe process
- 'Mailbox restored with error FailedCreateFolder' error message appears after Advanced Export finished when primary PST storage location is out of space
- Sample EDB's are missing for Exchange 2010
- Transfer progress bars may hang if network connection breaks during the snapshot
- Clicking on the "Reboot" button in RRC may leave the machine in a halted state; the machine will require a full power cycle when this occurs.
- Restore to GPT Dynamic Disks may fail. This issue is resolved in a future release.

Known Limitations

- Customers with large number of machines protected by a Replay Core should use SQL Server Database to collect reporting data. Using the default SQLCE database may result in slow queries.
- Reporting feature does not Report on activities prior to the 4.6 upgrade.
- Do NOT protect SCC nodes by IP address or FQDN. Replay logs an error "Failed to canonicalize source 'hostname' from target path" and replication will fail. Use the NETBIOS name to protect the machine.
- Replay will not snap volumes located on an attached VHD.
- BMR of Win2k8 R2 or Win7 machines with SRP will fail to boot without perform several post-processing steps manually. Refer to article: http://www.appassure.com/support/KB/4130306/
- "Add Boot Entry for RRC" option doesn't work for Win7/2k8r2 boxes with a SRP
- Replay can't export disks bigger than 2TB to VMware VMDKs. This is a limitation of VMware.
- Exported VMs may be unbootable on systems with mismatched boot and system volumes.
- Base image is taken after restoring to new machine from Rescue Image.
- SQL tab missing on server properties page when protecting a SQL2000 machine.
- The Check button on the Credentials tab of the boot CD Builder will verify the core's credentials, if the Boot CD Builder is running on the Core. If the Boot CD Builder is running on an agent, the Check button will not successfully validate the Core's credentials.
- System Reserve Partition (SRP) should not have a drive letter prior to performing "Repair Boot" in Replay Recovery Console (RRC).

Push Install Security Considerations

The push install feature is used to install Replay Agents remotely from the Replay Core to centralize the deployment of agents.

If both computers are in the same domain

Push Agent installation from computer A (Replay Core) to computer B (Replay Agent) when both computers are in the same domain.

User permissions:

- Computer A – User should be in local "Administrators" group.
- Computer B – User should be in local "Administrators" group

Firewall settings:

- Computer A – Can be on
- Computer B – Should be enabled "Remote Administration" rule. See appendix A.

UAC:

- Computer A – Can be on
- Computer B – Can be on

If one machine is in workgroup other machine in a domain

Push Agent installation from computer A (Replay Core) to computer B (Replay Agent) when computer A is in a domain and computer B is in a workgroup.

User permissions:

- Computer A – User should be in local "Administrators" group.
- Computer B – User should be in local "Administrators" group

Firewall settings:

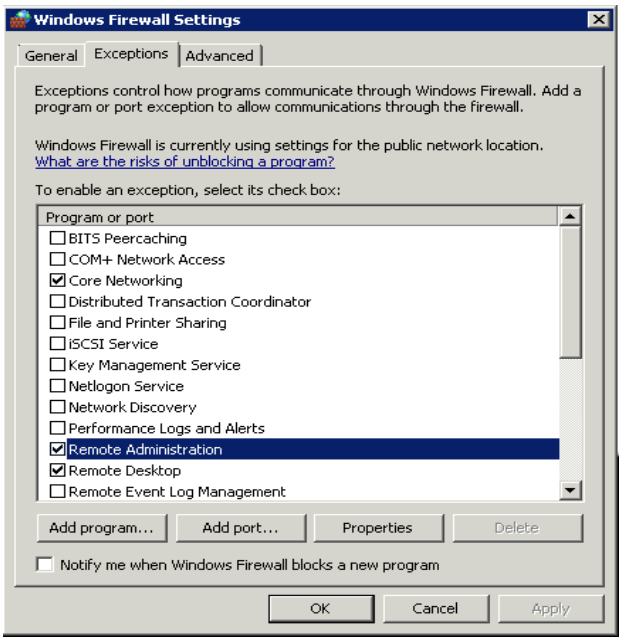
- Computer A – Can be on
- Computer B – Should be enabled "Remote Administration" rule. See appendix A.

UAC:

- Computer A – Can be on
- Computer B – Should be off.

How to enable "Remote Administration" rule in firewall on Windows 2008/Vista

Go to control panel. Open Windows Firewall. Click change settings. Go to Exceptions tab. Check Remote Administration.



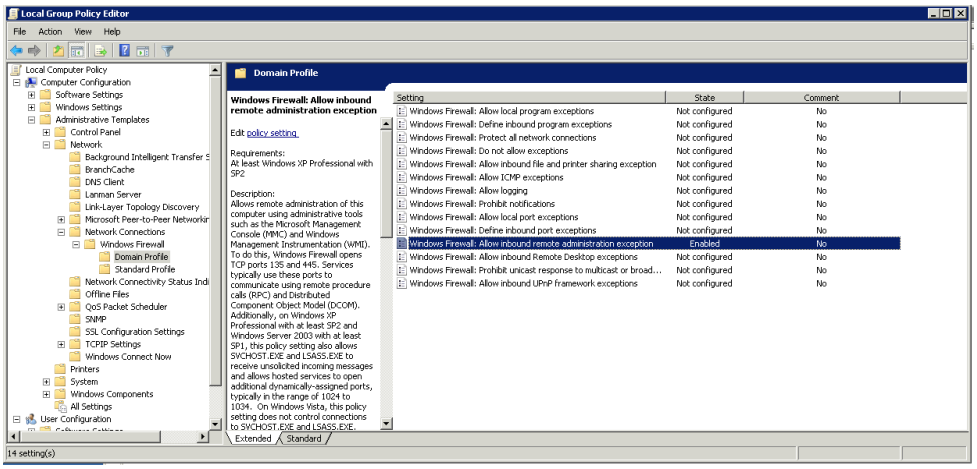
How to enable "Remote Administration" rule in firewall on Windows 2008 R2/Windows 7

Local Policy

1. Click Start, click Run, type gpedit.msc, and then click OK.
2. Under Console Root, expand Computer Configuration, expand Administrative Templates, expand Network, expand Network Connections, expand Windows Firewall, and then click Domain Profile.
3. Right-click Windows Firewall: Allow remote administration exception, and then click "Properties".
4. Click Enabled, and then click OK.

Domain Policy

1. Create new GPO in active directory or use current linked GPO, and edit it.
2. Under Computer Configuration, expand Administrative Templates, expand Network, expand Network Connections, expand Windows Firewall, and then click Domain Profile.
3. Right-click Windows Firewall: Allow remote administration exception, and then click Properties.
4. Click Enabled, and then click OK.



Replay Agent/Core Authentication

Unique credentials can be specified for each Replay Agent that is not in the same domain or workgroup as the Replay Core. Replay requires authentication for the following components:

1. Replay Admin Console when connecting to a remote Replay Core for management
2. Replay Core communicating with Replay Agents.
3. Replay Agents communicating with Replay Cores
4. Replication between Cores
5. Replay Agent and Replay Core services

All credentials are validated to ensure the user is in the local "Administrators" group or in the "ReplayAdministrators" group (domain or local). If the credential is not in either of the groups, authentication will fail. If you use the ReplayAdministrators group, these credentials will also ensure that the Administrator level credentials are not required for authorization purposes.

Optionally, this approach allows the security administrator to set up different credentials for different Replay Agents. For single domain or multi-domain implementation with trusts, the default service credentials are sufficient but for multiple domain environments specific Replay Agent and Replay Core credentials are required.

Example 1

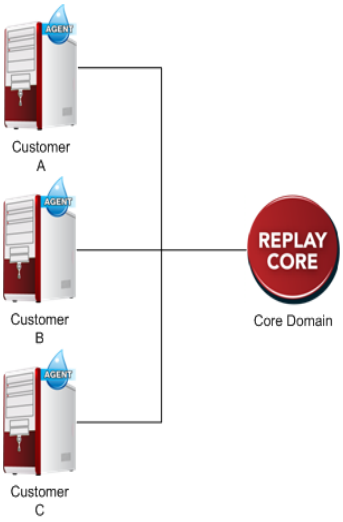
There are machines in the network located on multiple domains and workgroups. The security administrator may want to create 1 account on the Replay Core in the ReplayAdministrators group and 1 account each on the agent machines. To configure authentication using the **ReplayAdministrators** group:

- WORKGROUPA will have WORKGROUPA\ragent1 for agent credentials and COREDOMAIN\radmin for core credentials.
- DOMAINB will have DOMAINB\ragent2 for agent credentials and COREDOMAIN\radmin for core credentials.

- DOMAINC will have DOMAINC\ragent3 for agent credentials and COREDOMAIN\radmin for core credentials.

Example 2

There are machines at multiple customer sites. The security administrator may want to create 3 accounts on the Replay Core in the ReplayAdministrators group and 1 account each on the Agent machines. To configure authentication using the **ReplayAdministrators** group:



- CUSTOMER A will have CUSTOMER-A\ragent for agent credentials and MSPDOMAIN\CUSTOMER-A for core credentials.
- Customer B will have CUSTOMER-B\ragent for agent credentials and MSPDOMAIN\CUSTOMER-B for core credentials.
- Customer C will have CUSTOMER-C\ragent for agent credentials and MSPDOMAIN\CUSTOMER-C for core credentials.

Exchange 2010 Support

Replay is an Exchange-aware application that supports the VSS writer for Exchange 2010. For single server implementations, Replay protects the active databases. For DAG implementations, passive mailbox database copies can be protected using Replay reducing the performance impact on active databases.

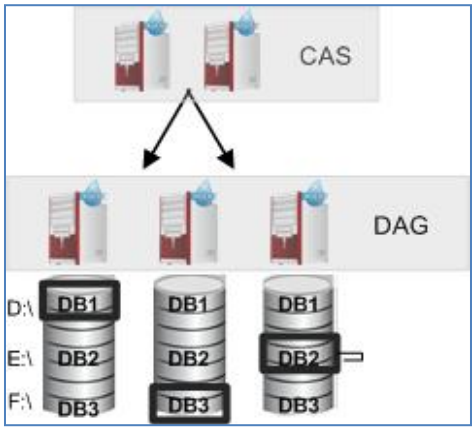
After performing a restore of a volume containing Exchange 2010 databases in a DAG configuration, you may have to activate a copy of a database (if the database was previously active on this node) or perform a synchronization (if the database was a copy).

Using Replay on Exchange Mailbox Role Servers

If a server is not a member of a DAG, the active databases are protected. Replay will protect all of the volumes including the system volume, the database volumes and log volumes. Full system recoveries, volume and database recoveries are supported. Mailbox database and volume rollbacks to Exchange 2010 DAG clusters require some manual steps to complete successfully. See the rollback and restore sections below for more details.

Using Replay on Database Availability Group Members

If a server hosting the data being backed up is a member of a database availability group (DAG) and hosts both active and passive database copies, the best practice is to protect the volumes that contain passive copies of the databases. This means that passive copies should be placed on volumes that don't contain active copies. You need to configure Replay to protect the volumes that contain the passive copies only. In the example below, protect the D volume on DAG member 1, F volume on DAG member 2 and the E volume on DAG member 3. Of course, the system volume should be protected along will all volumes on the CAS servers. Full member node recoveries and passive volumes and database restores are supported.



Rolling Back Non-System Volumes Containing Exchange 2010 Mailbox Databases

To perform a roll back on a volume containing Exchange 2010 data on a DAG failover cluster node, you must take the following steps:

- Ensure that whichever volumes you are rolling back to currently have only active mailbox databases or replicated mailbox database that are in the suspended state.
- Ensure the active mailbox databases corresponding replicated mailbox databases are in the suspended state.
- Roll back the volumes using the Replay Admin Console
- Wait for successful completion of the rollback.
- In EMC mount the restored mailbox database.

- In EMC, on the mailbox database with the Suspended status, perform Update Database Copy operation on the suspended copy. NB: when asked about clearing existing logs or checkpoints always answer yes.

Restoring Exchange 2010 Mailbox Databases

To perform a restore of an individual mailbox database to an Exchange 2010 DAG failover cluster, the automatic rollback feature in Replay is not available. Instead, the following manual steps must be taken:

- Stop all Replay snapshots until resumed
- In the Exchange Management Console (EMC) suspend mailbox database copy for the active mdbs you are about to restore
- In EMC, dismount the active mailbox databases you are about to restore
- In Replay Admin Console, mount as read-only the recovery point that contains the mailbox database you are about to restore
- On the active mailbox databases, move or delete ALL files that comprise the mailbox databases you are restoring from their respective directories
- Copy ALL files that comprise mailbox database that you are restoring from the mounted snapshot to their corresponding directories on the ACTIVE DAG cluster node
- In EMC mount the restored mailbox databases.
- In EMC, on the mailbox databases with the Suspended status, perform Update Database Copy operation on the suspended copy. NB: when asked about clearing existing logs or checkpoints always answer yes.

Upon correctly executing these steps the mailbox database will be restored to the active DAG node, servicing clients with a healthy copy in progress.

Preparing Windows 2003/Windows XP Agents for export to Hyper-V

In order to export Windows 2003 machines to Hyper-V, you must install the Hyper-V integration components on the Windows 2003 server before creating a Replay snapshot. You can find the integration components ISO, vmguest.iso, in the c:\windows\system 32 folder on any Windows 2008 Hyper-V host.

If you run the setup.exe in the root of this disk on a Windows 2003 server, it will not install. You will get the message

The Hyper-V integration services can only be installed inside of a virtual machine running under Hyper-V

To get around this you have to drill down to the en-us\update folder and run update.EXE. Now on the server you will then see the hyper-v guest components installed in add/remove programs.

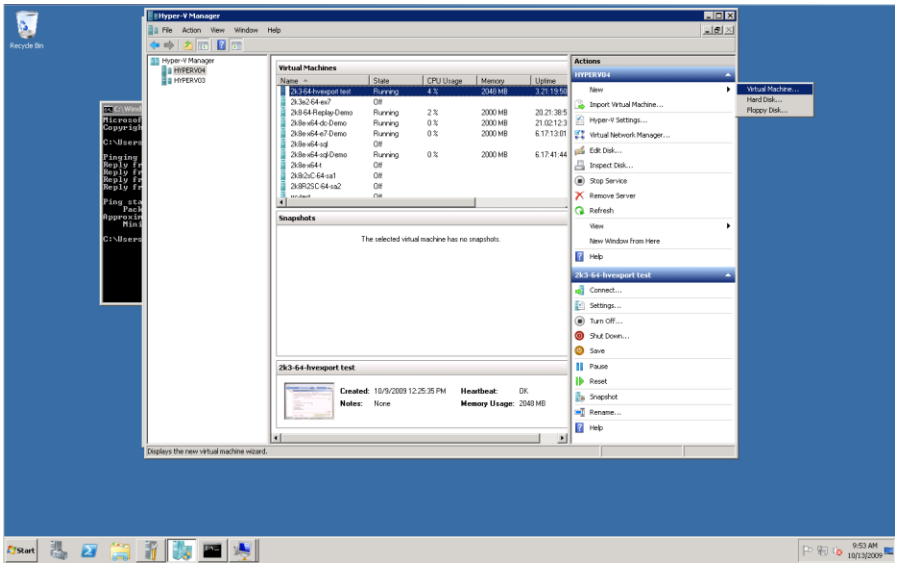
You can now proceed with creating a Replay snapshot of the Windows Server 2003/Windows XP machine. When the snapshot is complete, create a VHD by using the "Create VM" command from the Recovery Points tab and select "Hyper-V R2" as the export type.

Windows Server 2008 and Windows Server 2008 R2 includes the integration components so the above steps are not required.

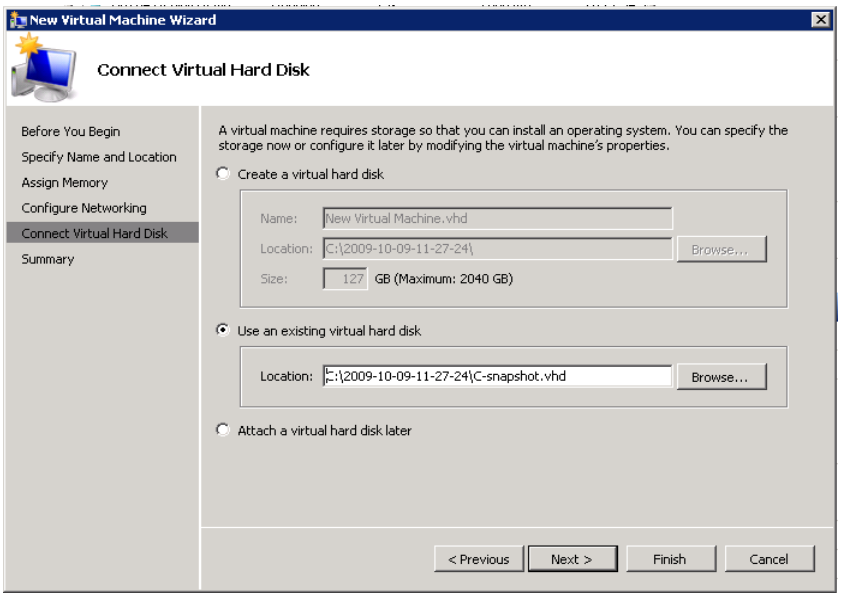
Attaching an Exported VHD

In order to attach an exported VHD, please perform the steps below.

1. Make sure the VHD is accessible from the Hyper-V host.
2. Open the Hyper-V console and create a new VM.



3. Configure the new Virtual Machine.
4. Attach the VHD from the Replay export.
5. After creating the new virtual machine, use settings for the virtual machine and match the number of CPU's from the source machine.
6. If the Hyper-V integration components are not installed in the Replay export, boot the new VM and install the Hyper-V integration components. After this a reboot is required.



Resync vs. Base Images

The difference between a base image and a resync lies in how the Replay Core handles the data it receives from the Replay Agent. In the case of a base image, every block sent by the agent is stored in a new base image file, which starts a new epoch chain. In a resync, every block sent by the agent is compared to the value of the same block as it appears in the most recent snapshot of the agent; any block that doesn't match is written to a new epoch file, which becomes part of an existing epoch chain.

Whenever an agent transmits a base image (due to volume inconsistency after a system failure, an improper volume dismount, a dirty volume, or a missing previous epoch), the core attempts to perform a resync if possible (the only exception to this is when the 'Force Base Image' option is used in the admin console). A resync is possible if there is a valid epoch chain on the core for the volume being transferred (uniquely identified not by drive letter but by a Replay-assigned GUID), and the most recent epoch in that chain can be successfully mounted by Replay. If a resync is not possible, the core automatically reverts to transferring a normal base image.

Scheduling Detailed Integrity Checks and Rollups

Detailed integrity checks and rollups jobs can be scheduled on a per protected server basis. This feature is useful when protecting multiple very large transactional environments from one Replay Core. For example, you can schedule rollups to run on the weekend to reduce pressure during the week when you run detailed integrity checks.

APPENDIX A

Event ID Codes and Messages

Log Id	Log Level	Log Message
5200	Error	Could not start replication service, exception:'%1$s::error'.
5201	Error	While attempting to verify %1$s::verifyDesc, an error was encountered which prevented the verification from proceeding: %2$S::error
5202	Error	Verification failed for %1$s::verifyDesc. The block in the destination VMDK at block offset 0x%2$I64x::block does not match the corresponding block in the source disk. The first difference is at byte offset 0x%3$x::firstDiffOffset in the block, and the last difference is at byte offset 0x%4$x::lastDiffOffset. The expected value for the block has been written to %5$s::expectedFileName, and the value read from the VMDK is at %6$s::actualFileName
5203	Error	Attempt to get status information from physical standby '%1$s::standbyName' failed with: %2$S::errorMessage.
5204	Error	Attempt to establish credentials with physical standby '%1$s::standbyName' failed with: %2$S::errorMessage.
5205	Error	The license key for '%1$s::name' does not include a license for Physical Standby. Contact ${CompanyName} Sales for an updated license key.
5206	Error	${ProductName} Repository '%1$s::repositoryname' for source '%2$s::sourceName' is unavailable.
5207	Error	Access denied trying to write to '%1$s::dllPath'. Make sure the ${ProductCore} service account has write permissions to '%2$s::path'
5208	Error	The license key for '%1$s::sourcename' does not include a license for Virtual Standby. Contact ${CompanyName} Sales for an updated license key
5209	Error	The license key for '%1$s::sourcename' does not include a license for Virtual Standby to vSphere host. Contact ${CompanyName} Sales for an updated license key
5210	Error	Unable to attach database '%1$s::database' from SQL instance '%2$s::instance' on server '%3$s::source'. There may be a problem with the integrity of the database.
5211	Error	Unable to detach database '%1$s::database' from SQL instance '%2$s::instance' on server '%3$s::source'. There may be a problem with the integrity of the database.
5212	Error	Failed to drop the temporary database.
5213	Error	There was a problem determining the existence of temp database while attempting to perform attachability check on database '%1$s::database' from SQL Server instance '%2$s::instance' on '%3$s::server'
5214	Error	There was a problem trying to online the database: '%1$s::database' from SQL Server instance '%2$s::instance' on '%3$s::server'
5215	Error	There was a problem offlining the database: '%1$s::database' from SQL Server instance '%2$s::instance' on '%3$s::server'
5216	Error	Unable to perform recovery point checking on protected SQL Databases because the current login account does not have the required role membership.
5217	Error	Read and verify fragmented pages failed with %1$S::errorMessage.
5218	Error	EDB checksum thread '%1$d::threadid' failed with %2$S::errorMessage.
5219	Error	Failed to export VM for source '%1$s::sourceName' to '%2$s::exportPath' on datastore '%3$s::datastore': %4$S::vmfstoolErr.
5220	Error	Failed to export recovery point for source '%1$s::sourceName' to '%2$s::exportPath' on datastore '%3$s::datastore': %4$S::vmfstoolError.
5221	Error	Authentication failed for client at %1$s::remoteAddress.

Log Id	Log Level	Log Message
5225	Error	${ProductName} connection failed with: %1$S::errorMessage
5227	Error	The VM export for '%1$s::sourceName' failed due to an unrecognized error
5228	Error	The VM export for '%1$s::sourceName' failed due to the following Scp error: %2$S::errorMessage.
5229	Error	The VM export for '%1$s::sourceName' failed due to the following error: %2$S::errorMessage.
5231	Error	Rollup failed on uncompress/redup of epoch data. Uncompress level = %1$d::level.
5232	Error	Rollup failed on uncompress/redup with bad length on epoch data. Uncompress level = %1$d::level Bad length=%2$d::len.
5233	Error	Rollup failed to compress/dedup. Compress level = %1$d::level.
5234	Error	Rollup failed while reading an epoch - Invalid data length. Should be %1$d::goodLen was %2$d::badLen.
5236	Error	RP BuildDatabase for source '%1$s::sourceName' failed with; %2$S::errorMessage
5237	Error	Found duplicate %1$s::fileType '%2$s::dupFile' move files for Repl service.
5238	Error	Update RpDatabase for source '%1$s::sourceName' volume '%2$s::volume' epoch '%3$d::epochNum' after dismount failed with: %4$S::errorMessage
5239	Error	Update or add file to RpDatabase for Repl service failed: source '%1$s::sourceName' volume '%2$s::volume' epoch '%3$d::epochNum' err='%4$S::errorMessage'.
5240	Error	Update or add file to RpDatabase for '%1$s::sourceName': Failed to get file header from for '%2$s::fileName'. Err=%3$S::errorMessage.
5241	Error	Failed to update source '%1$s::sourceName'.
5242	Error	Source '%1$s::sourceName' has same target path '%2$s::targetpath' that '%3$s::otherSource' does.
5243	Error	Unable to access repository path '%1$s::reposPath' for '%2$s::sourceName' due to a Windows error. This path will not be used to store recovery points until this error is corrected. Error details: %3$s::errorMessage.
5244	Error	Unexpected internal error verifying recovery points for source '%1$s::sourceName'.
5245	Error	Unexpected internal error verifying recovery points for source '%1$s::sourceName' SQL statement '%2$S::sqlStatement' failed with '%3$S::errorMessge'.
5246	Error	There was an error getting the local replication status for '%1$s::sourceName'. Local replication status info will not be available.
5247	Error	There was an error getting the replication settings for '%1$s::sourceName'. Replication settings will not be available.
5248	Error	There is a configuration error on the ${ProductAgent}. This ${ProductAgent} is not currently protected by a ${ProductCore}
5249	Error	There was an error saving the replication settings for '%1$s::sourceName'. Changes to replication settings may not take effect.
5250	Error	SQL Server database log file '%1$s::logfilepath' on Database '%2$s::database' on instance '%3$s::instance' could not be resolved to a volume in the recovery point; SQL checks will likely fail.
5251	Error	SQL Server database data file '%1$s::datafilepath' on Database '%2$s::database' on instance '%3$s::instance' could not be resolved to a volume in the recovery point; SQL checks will likely fail.
5252	Error	Policy flags are unknown for both SQL and EDB Recovery Point check type.
5253	Error	Update of epoch '%1$d::epoch' on volume '%2$s::volume' failed with: %3$S::errorMessage
5254	Error	Attachability tests cannot be performed because there are no local SQL Server instances installed on this machine.
5255	Error	Attachability tests cannot be performed because the local SQL Server instance has been stopped.

Log Id	Log Level	Log Message
5256	Error	The ${ProductCore} repository for '%1$s::sourceName' does not have enough space to transfer a snapshot of volume '%2$s::volume'. Consider adding another disk on the ${ProductCore} repository, changing the retention policy, or deleting older recovery points.
5257	Error	Add epoch '%1$d::epoch' on volume '%2$s::volume' after FTE to RpManager failed with: %3$S::errorMessage.
5258	Error	write${ProductName}IndexFile: WriteFile failed on file handle. Bad length %1$x::HexIndexFd
5259	Error	Update previous epoch '%1$d::epoch' on volume '%2$s::volume' failed with: %3$S::errorMessage
5260	Error	write${ProductName}IndexFile: Seek error on file handle %1$x::HexIndexFd
5261	Error	read${ProductName}DataFile: read length %1$u::Length is too large. Max is %2$u::MaxBlockLen file Handle 0x%3$x::HexDataHandle.
5262	Error	read${ProductName}DataFile: Seek error on file handle %1$x::HexDataHandle.
5263	Error	read${ProductName}DataFile: ReadFile failed due to sparse offset at %1$x::HexDataOffset size attempted 0x%2$x::HexLength got %3$u::BytesRead on file handle %4$x::HexDataHandle.
5264	Error	Add rolled up epoch '%1$d::epoch' on volume '%2$s::volume' to RpManager failed with: %3$S::errorMessage
5265	Error	Delete rolled up epoch '%1$d::epoch' on volume '%2$s::vol' from RpManager failed with: %3$S::errorMessage
5266	Error	Got out-of-place src vol offset %1$I64u::VolOffset and couldn't determine which Replay file it belongs to.
5267	Error	Failed to locate repository path for epoch '%1$d::epoch' for volume '%2$s::volume'.
5268	Error	Epoch chain broken for volume '%1$s::volume'. Missing epoch='%2$d::expectedEpoch'. Ignoring bad epoch chain from possible recovery points '%3$d::startEpochChain' to epoch '%4$d::lastEpochInchain'.
5269	Error	There is a problem with your ${ProductName} recovery points. Please contact ${CompanyName} Support for assistance resolving this issue.
5271	Error	Unable to perform snapshot because the ${ProductName} license for '%1$s::source' does not have the '%2$s::option' option enabled. Please contact ${CompanyName} Sales to request a new license.
5279	Error	Unable to transfer snapshot of volume '%1$s::volume' on '%2$s::sourceName' as of '%3$s::timeStamp' because the previous snapshot in the chain is invalid or not readable. If this ${ProductCore} is using a NAS to store recovery points, verify the NAS is online and accessible. If this message persists, restart the ${ProductCore} to allow ${ProductName} to work around this issue.
*5281	Error	${ProductAgent} (%1$s::agent) requires a reboot. Please reboot the machine.
*5282	Error	There was an error getting the remote replication status for '%1$s::sourceName'. Remote replication status info will not be available.
*5283	Error	There was an error getting the remote agent status for '%1$s::sourceName'. Remote Agent status will not be available.
*5284	Error	There was an error getting the remote core volume(s) list for '%1$s::sourceName'. Remote Core Volume(s) info will not be available.
6200	Error	Maximum limit for EDBs (%1$d::edbLimit) has been reached.
6201	Error	The repository on the ${ProductCore} has insufficient space to store the snapshot of volume '%1$s::volume'. Remaining protected volumes will be snapped if sufficient space exists.
6202	Error	The snapshot of protection group '%1$s::pg'.failed.
6203	Error	One of the required device drivers, %1$s::aavolflt or %2$s::aafsflt are not present or are not running. If you have just installed ${ProductName}, please reboot before attempting a snapshot. If you have already rebooted, please contact Customer Support.

Log Id	Log Level	Log Message
6204	Error	Unable to transfer snapshot of volume '%1$s::volumeElement' due to a timeout or a conflict with a transfer from another machine. Check the log on the ${ProductCore} for details.
6205	Error	Error getting SQL Server metadata from the host machine: %1$s::what
*7015	Error	Encountered error in reports subsystem while replicating '%1$s::sourceName': %2$s::exceptionText
*7016	Error	Error initializing reports subsystem. Error details: %1$s::exceptionText
9001	Error	This license does not authorize the use of ${ProductName} Recover Anywhere.
*9007	Error	Authentication failed for user '%1$s::user'.
*10700	Error	Reporting database was not initialized.
*10701	Error	Reporting database was not initialized, Error: %1$s::error
*10702	Error	Error retrieving data from the reporting database.
*10703	Error	Error retrieving data from the reporting database, Error: %1$s::error
*10704	Error	Error populating data to the reporting database.
*10705	Error	Error populating data to the reporting database, Error: %1$s::error
5102	Warning	License '%1$s::optionName' option for ${ProductAgent} %2$s::agentName was disabled after license update.
5108	Warning	The mountability or checksum check for '%1$s::source' cannot be performed, because your ${ProductName} license does not include the Exchange Assurance Pack. Please contact ${CompanyName} Sales to request a new license.
5109	Warning	The mountability for '%1$s::source' cannot be performed, because your ${ProductName} license does not include the Exchange Assurance Pack. Please contact ${CompanyName} Sales to request a new license.
5110	Warning	No mountability checks for '%1$s::source' can be performed, because your ${ProductName} license does not include the Exchange Assurance Pack. Please contact ${CompanyName} Sales to request a new license.
5111	Warning	SQL Server log truncation for '%1$s::source' cannot be performed, because your ${ProductName} license does not include the SQL Server Application Pack. Please contact ${CompanyName} Sales to request a new license.
5112	Warning	Exchange log truncation for '%1$s::source' cannot be performed, because your ${ProductName} license does not include the Exchange Application Pack. Please contact ${CompanyName} Sales to request a new license.
5113	Warning	Unable to perform snapshot because the ${ProductName} license for '%1$s::source' has expired or is invalid. Please contact ${CompanyName} Sales to request a new license.
5114	Warning	The VM for source '%1$s::sourceName' at '%2$s::exportPath' is currently in use and will not be updated. To apply updates to this VM, shut it down first.
5115	Warning	The export for '%1$s::sourceName' at '%2$s::exportPath' cannot currently be performed because of an error accessing the export path: '%3$s::failureMessage'. The export will be retried at a later time.
5116	Warning	${ProductName} connection ended while %1$s::acct had outstanding mount of %2$s::source: %3$s::volName as of %4$s::time; received %5$d::numBytes bytes of the next %6$d::len byte message header.
5117	Warning	Rollup after retention period for source %1$s::sourceName had a failure so epoch cleanup is aborted. If successful on the next run the epochs after the retention period will get deleted.
5118	Warning	${ProductName} repository '%1$s::repositoryDrivePath' has less than %2$u::percentFreeSpace%% free space. To reduce disk usage increase the protection interval and/or reduce the time of the retention policy.
*6047	Warning	Snapshot partially successful for source '%1$s::sourceName', volumes:'%2$s::volumeNames'.

Log Id	Log Level	Log Message
6100	Warning	One of the change log records for volume '%1$s::volume' is not valid possibly due to corruption. A new base image will be forced on the volume.
6101	Warning	One of the log files for volume '%1$s::volume' is too large to map. A new base image will be forced on the volume.
6102	Warning	The VSS writer '%1$s::writerName' failed while attempting to take a snapshot. This writer will be ignored and the snapshot retried. If this writer consistently fails please review the instructions at ${KnowledgeBase} .
6106	Warning	The ${CompanyName} ${ProductName} drivers are missing or not loaded. Make sure this computer has been rebooted since ${ProductName} was installed. ${ProductAgent} will be unable to protect data on this machine until the ${CompanyName} drivers are properly installed.
5000	Info	${ProductCore} service has started.
5001	Info	${ProductCore} service is running.
5002	Info	${ProductCore} service has stopped.
5003	Info	${ProductCore} service is paused.
5005	Info	Forcing '%1$s::typeSnapshot' snapshot on '%2$s::protectionGoupNames' on source '%3$s::sourceHostname'.
5006	Info	Finished transferring '%1$s::typeSnapshot' from source for volume '%2$s::protectedVolumeName' epochnum '%3$i::epochNum' previous epoch '%4$i::previousEpochNum' snapshot time '%5$s::snaptime' '%6$s::clusterMsg' dependent Volumes '%7$i::dependentVolume'.
5007	Info	Client authenticated successfully for: '%1$s::domainName'\'%2$s::userName'.
5010	Info	Service Stopped
5011	Info	Mountability check on EDB:'%1$s::edbDisplayName' was successful.
5012	Info	Performing mountability check on EDB:'%1$s::edbDisplayName'.
5013	Info	Performing attachability check on SQL database '%1$s::databaseName' for SQL Server instance '%2$s::instanceName' on '%3$s::agentName'.
5014	Info	Attachability check on SQL database '%1$s::databaseName' for SQL Server instance '%2$s::instanceName' on '%3$s::agentName' was successful.
5015	Info	Verifying page checksums for all Information Stores on volume '%1$s::protectedVolumeName' on '%2$s::sourceMachine' as of '%3$s::epochFileTime'.
5016	Info	Verification of page checksums for all Information Stores on volume '%1$s::protectedVolumeName' on '%2$s::sourceMachine' as of '%3$s::epochFileTime' completed. '%4$i::totalEdbsChecked' EDB(s) checked; '%5$i::totalEdbsPassed' EDB(s) passed; '%6$i::failedTotalEdbsChecked' EDB(s) failed.
5017	Info	Starting checksum verification of EDB '%1$s::edbName' on '%2$s::agentName'.
5021	Info	Checksum verification of EDB '%1$s::edbName' on '%2$s::agentName' completed after '%3$s::estimatedTime'. Average verification rate: '%4$f::pagesPerSecond' pages per second. '%5$I64u::pageCount' pages checked total. Check result: '%6$s::resultMessage'
5022	Info	Log truncation forced on source '%1$s::sourceName'. The next successful snapshot of volume(s) [%2$s::msgVolumes] will trigger Exchange log truncation.
5023	Info	Successfully sent continuous restore command to '%1$s::sourceName' to restore snapshot of '%2$s::driveOnSource' to physical standby volume '%3$s::rollbackDrive'.
5024	Info	Restore status '%1$s::srcDestVols': Successful.
5025	Info	Restore status '%1$s::srcDestVols': Aborted.
5026	Info	Requested to delete recovery points for source '%1$s::sourceName' prior to '%2$s::timeStr'.
5027	Info	Deleting all recovery points for source '%1$s::sourceName'.
5028	Info	Deleting all recovery points and configuration settings for source '%1$s::sourceName'.

Log Id	Log Level	Log Message
5029	Info	Forcing recovery point check for '%1$I64u::epochSize' volume(s) from '%2$s::sourceName' as of '%3$s::timeStampString'.
5031	Info	Validating recovery point from '%1$s::sourceName' containing volumes '%2$s::volumeNames' as of '%3$s::timestampString'.
5032	Info	Completed validation of recovery point from '%1$s::sourceName' containing volumes '%2$s::volumeNames' as of '%3$s::timestampString'.
5033	Info	Skipping mountability check. The check policy flags for SQL Server and Exchange Server are both not set.
5035	Info	Deleting recovery points for volumes '%1$s::volumesToDelete' on source '%2$s::sourceName'.
5036	Info	No files were found to delete for source '%1$s::sourceName' prior to '%2$s::deletePriorToTimeStampStr'.
5037	Info	No files are eligible to delete for source '%1$s::sourceName' prior to '%2$s::deletePriorToTimeStampStr'.
5038	Info	Eligible recovery points were deleted for source '%1$s::sourceName' prior to '%2$s::deletePriorToTimeStampStr'.
5039	Info	Restoring snapshot of '%1$s::storeName' on '%2$s::sourceName' as of '%3$s::creationFileTime' to '%4$s::toStoreName' on '%5$s::toSourceName'. Dismounted stores will '%6$s::remountStorageGroupsFlag' be remounted after restore completes. Stopped SQL instances will '%7$s::remountSqlFlag' be restarted after restore completes.
5040	Info	Starting restore of '%1$s::rollbackText'.
5041	Info	Completed restore of '%1$s::rollbackText' in '%2$f::rollbackDurationInSeconds' second(s).
5045	Info	Rollup Manager completed rollup policy for %1$s::sourceName.
5046	Info	Rollup Manager starting rollup for %1$s::sourceName.
5049	Info	Rollup policy for '%1$s::sourceName' indicates rollup should not run today, skipping rollup.
5050	Info	Rollup Manager invoking rollup policy for source '%1$s::sourceName' on '%2$s::localTimeNow'.
5055	Info	Detailed integrity check schedule for '%1$s::sourceName' indicates detailed integrity check should not run now; skipping check.
5056	Info	Doing nightly check for '%1$s::sourceName' as of '%2$s::timeStamp' Volumes: '%3$s::volumes'.
5057	Info	Nightly check completed for '%1$s::sourceName' as of '%2$s::timeStamp'. Volumes: '%3$s::volumes'.
5059	Info	Exchange EDB checksum check succeeded for '%1$s::sourceName'. The next successful snapshot of volume(s) [%2$s::volumes] will trigger Exchange log truncation.
5060	Info	SQL Server nightly log truncation is enabled for '%1$s::sourceName'. The next successful snapshot of volume(s) [%2$s::volumes] will trigger SQL Server log truncation.
5061	Info	Successfully %1$s::createdOrUpdated VM at %2$s::exportPath from snapshot of '%3$s::sourceName' as of %4$s::timestamp
5062	Info	Successfully %1$s::createdOrUpdated rescue image at %2$s::exportPath from snapshot of '%3$s::sourceName' as of %4$s::timestamp
5063	Info	Exporting snapshot of '%1$s::sourceName' as of %2$s::timestamp to virtual machine at %3$s::path
5064	Info	Exporting snapshot of '%1$s::sourceName' as of %2$s::timestamp to rescue image at %3$s::path
5067	Info	Rolling up base image %1$s::sourceName %2$s::volume %3$d::epoch to %4$d::endEpoch %5$s::baseSize.
5068	Info	Rollup Manager completed rollup for source '%1$s::sourceName'.
5069	Info	Deleting all recovery points and configuration settings for protected server '%1$s::sourceName'.

Log Id	Log Level	Log Message
5070	Info	Restoring snapshot of %1$s::volume on %2$s::protectedSource as of %3$s::time to %4$s::rollbackdrive on %5$s::destMachine. Dismounted stores will %6$s::not1 be remounted after restore completes. Stopped SQL Instances will %7$s::not2 be restarted after restore completes.
5074	Info	Snapshot completed for %1$s::vols.
5088	Info	Finished transferring '%1$s::typeSnapshot' from source for volume '%2$s::protectedVolumeName' snapshot time '%3$s::snaptime' '%4$s::clusterMsg'.
6000	Info	Transferring Base Image for Volume '%1$s::volumeName'.
6001	Info	Snapshot completed for '%1$s::volumeName'.
6002	Info	Snapshot is starting for source '%1$s::sourceName', volumes:'%2$s::volumeNames'.
6003	Info	Snapshot is completed for source '%1$s::sourceName', volumes:'%2$s::volumeNames'.
6004	Info	Unable to take VSS snapshot and transfer data for '%1$s::volumeNames': '%2$s::errorDescription'
6005	Info	Unable to take VSS snapshot and transfer data for '%1$s::volumeNames': There was a timeout while taking the VSS snapshot. Review Microsoft Knowledge Base article 826936 and set MinDiffAreaFileSize to a larger value.
6006	Info	VSS is not available right now. Retrying VSS snapshot in '%1$i::retryDelay' seconds.
6007	Info	Skipping snapshot of '%1$s::driveLetters' protection start time has not yet arrived.
6008	Info	Skipping snapshots of '%1$s::driveLetters' disabled for the Backup Window.
6009	Info	Taking FULL snapshot of '%1$s::volumeName'.
6010	Info	Taking COPY snapshot of '%1$s::volumeName'.
6011	Info	Transferring volume data: '%1$s::volumeElement'.
6012	Info	Transferring Base Image for Volume: '%1$s::volumeElement'.
6013	Info	The ${ProductCore} is currently busy processing a transfer from another machine. Another snapshot will be attempted in approximately %1$i::timeout minutes.
6016	Info	Restoring '%1$s::rollbackObjects' using snapshots on '%2$s::targetName'.
6017	Info	Non-instant restore volume '%1$s::rollbackDrive' to epoch '%2$u::volumeEpoch' on '%3$s::targetName'.
6018	Info	Normal (non-instant) restore of volume '%1$s::rollbackDrive' aborted.
6019	Info	Successfully completed rollback of volume '%1$s::rollbackDrive' to epoch '%2$u::volumeEpoch' on '%3$s::targetName'.
6020	Info	Instant restore of volume '%1$s::rollbackDrive' to epoch '%2$u::volumeEpoch' on '%3$s::targetName'.
6021	Info	Restoring store '%1$s::storeName' to '%2$s::destEdbPath' (STM file restoring to '%3$s::destStmPath').
6022	Info	Restoring store '%1$s::storeName' to '%2$s::destEdbPath'.
6023	Info	Restore of store '%1$s::storeName' completed successfully.
6024	Info	Restore of volume '%1$s::rollbackDrive' aborted.
6025	Info	Successfully completed restore of volume '%1$s::rollbackDrive' to epoch '%2$u::epoch' on '%3$s::targetName'.
6035	Info	Shutdown complete.
6037	Info	Base image already pending on '%1$s::protectionName'.
6038	Info	Forcing snapshot on '%1$s::protectionName'.
6039	Info	Snapshot already pending on '%1$s::protectionName'.
6042	Info	Volume %1$s::driveLetter has been assigned a ${ProductName} guid of %2$s::guid.

Log Id	Log Level	Log Message
6046	Info	Deleting association with ${ProductCore}
*6048	Info	Snapshot could not be started for source '%1$s::sourceName', volumes:'%2$s::volumeNames'.
7001	Info	Replicating %1$s::byteCount in %2$d::rpCount recovery points for protected server '%3$s::sourceName' to ${ProductCore} '%4$s::remoteReplayUri'
7002	Info	Replicated %1$s::byteCount in %2$d::rpCount recovery points for protected server '%3$s::sourceName' to ${ProductCore} '%4$s::remoteReplayUri' in '%5$s::timeSpan'
7004	Info	Replication for '%1$s::souceName' to '%2$s::remoteUri' is paused.
7005	Info	Replication for '%1$s::souceName' to '%2$s::remoteUri' is disabled.
7007	Info	Replication for '%1$s::souceName' to '%2$s::remoteUri' is stopped due to an unknown reason.
7008	Info	Replication was interrupted due to a locked Recovery Point.
7009	Info	Replication was aborted because rollup is in progress for '%1$s::sourceName'
7011	Info	Copy recovery points job %1$s::action for protected server(s) %2$s::servers, copying %3$s::numberOfBytes to %4$s::destVolume
7012	Info	Copy recovery points job completed for protected server(s) %1$s::servers, copied %2$s::numberOfBytes to %3$s::destVolume
7013	Info	Consume recovery points job %1$s::action for protected server(s) %2$s::servers, consuming %3$s::numberOfBytes to %4$s::destVolume
7014	Info	Consume recovery points job completed for protected server(s) %1$s::servers, consumed %2$s::numberOfBytes to %3$s::destVolume

*New