Replay 4

Important Release Notes
Build 4.6.28539 and above

This document outlines a several important notices that you should be aware of as you install, configure and begin using Replay 4.6. For important information regarding how to prepare your system before installing Replay, we encouraged you to download and review the installation guide located at http://kb.appassure.com.

New Features

- **Reporting** - Replay Core will aggregate Replay related activities and produce a report at a specified intervals. Six types of reports can be generated as outline below:
    - Summary Report contains:
        - Protected Machine Status
        - Backup summary
        - Exchange and SQL Mount check summary
        - Replication summary
        - Virtual Standby summary
    - Backup
        - Snapshot details
        - Exchange mount and checksum check details
        - SQL Attachability details
    - Core
        - Summary of Core activities
    - Replication
    - Repository
        - Summary of Repository usage
    - Rollup
    - Virtual Standby

- **Hyper-V Cluster Shared Volume (CSV) Support (Beta)** - Replay supports protecting Hyper-V hosts in Hyper-V Cluster Shared Volume environment. Protected Hyper-V hosts with CSV will not be able to create virtual standby environments. Hyper-V environments are not supported under VMware or other virtualization technologies.

4.6 Upgrade Instructions

Prior to upgrading the Replay Core, pause snapshot transfers for all Replay Agents. Please make sure that there are no transfers occurring during the upgrade process. A snapshot transfer during an upgrade process may cause a Base Image or Resync to be taken 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.

Follow the steps below:

1. Upgrade the Replay Core by performing an in-place upgrade. Choose "Modify Replay Core" in the installation setup menu. Step through the Installation Wizard to complete the upgrade process.
2. Upgrade the Replay Agent by performing an in-place upgrade. Choose "Modify Replay Agent" in the installation setup menu or use the Push Install feature to upgrade the Replay Agents.
3. When all Replay Agents and the Replay Core are upgraded, resume snapshot transfers for the Agents. The upgrade process is now complete.

Installation Considerations

- **Virus Scanners:** When installing the Replay Core on a machine with a Virus Scanner, the "C:\Replay Recovery Points" directory 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.
- **Single Mailbox Level Restores:** Single mailbox level restores require Outlook to be installed on the Replay Core.

Issues Resolved in this Release

- Admin Console was slow to update protected machine list or to switch between machines.
- Admin Console may not update status when run for a long time.
- Admin Console memory consumption may become high.
- Replay Core memory and CPU consumption may become high.
- Event Id added to Events tabs in Admin Console.
- Nested Groups are now supported for Authentication.

Known Issues

- Reporting feature will not be able to Report on activities prior to the 4.6 upgrade.
- 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.
- Replication may show errors on the first Replication attempt after the upgrade. Replication will resume normally after the error.
- Installer package may show 'Program Compatibility Assistant' dialog with 'Unknown Program' and 'Unknown Publisher'. The message does not affect the installation.
- MailRetriever restores appointments without 'Start time' and 'End time' on Exchange 2010.
- 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. This will be resolved in a future release.
- 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.
- Mount points are not preserved on doing an ESX export from 64bit windows 2008 and 2003.
- In rare cases, Snapshots fail with "Unable to transfer snapshot of volume 'C:' due to a timeout or a conflict with a transfer from another agent. **WORKAROUND:** Force a snapshot on one of the agents. This will be resolved in the next release.
- 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.
- Replay.log filled with DEBUG messages if replication target changes to later build but replication source stays at old build. This will be resolved in the next release.
- If a VM export can't be performed due to being in use, the registry is still updated with a new last-exported time. This will be resolved in the next release.
- In Rescue Image restore, initializing a destination disk while other disks are mapped to volumes causes other disks lose mapping. This will be resolved in a future release.
- Newly replicated RPs don't always appear in console immediately. **WORKAROUND:** Wait for the recovery points to be updated, make take several minutes.
- AdHoc VM or RP Export automatically aborts if protected server settings are changed. This will be resolved in a future release.

Known Limitations

- 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.
- 'Failed to load disk (VDS) information' error appears, when you start BootCDBuilder on Win XP.
- All volumes except "C:" are Offline when booting a VM created from export on 2008.
- 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.

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:

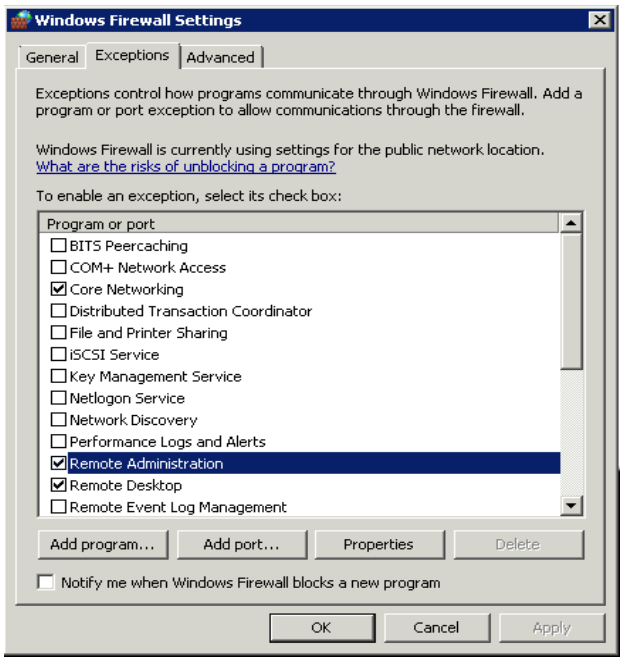
- Computer A – Can be on
- Computer B – Should be enabled "Remote Administration" rule. See appendix A.

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.



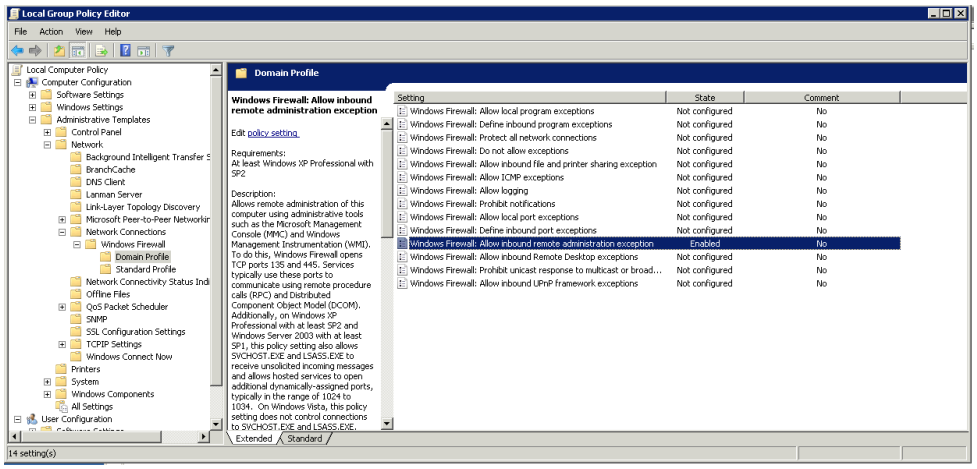
How to enable "Remote Administration" rule in firewall on Windows 2008 R2/Windows 7

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

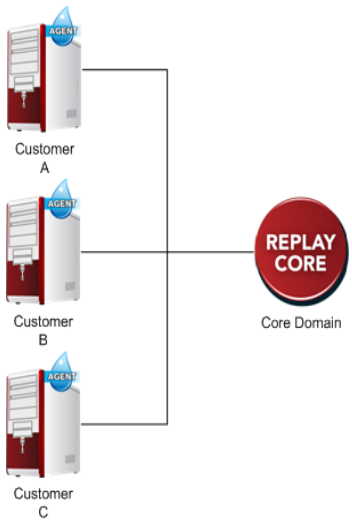
There are machines in the network located on multiple domains and workgroups. The security administrator may want to create 1 account on the Replay Core in the ReplayAdministrators group and 1 account each on the agent machines. To configure authentication using the **ReplayAdministrators** group:

- 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.

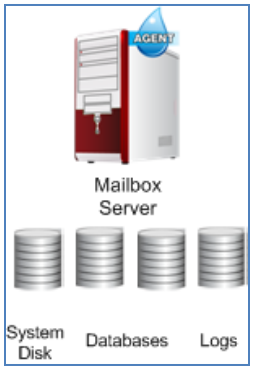
Exchange 2010 Support

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).

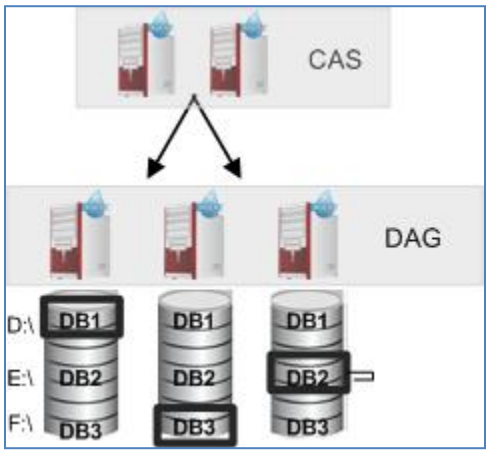
Using Replay on Exchange Mailbox Role Servers

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.

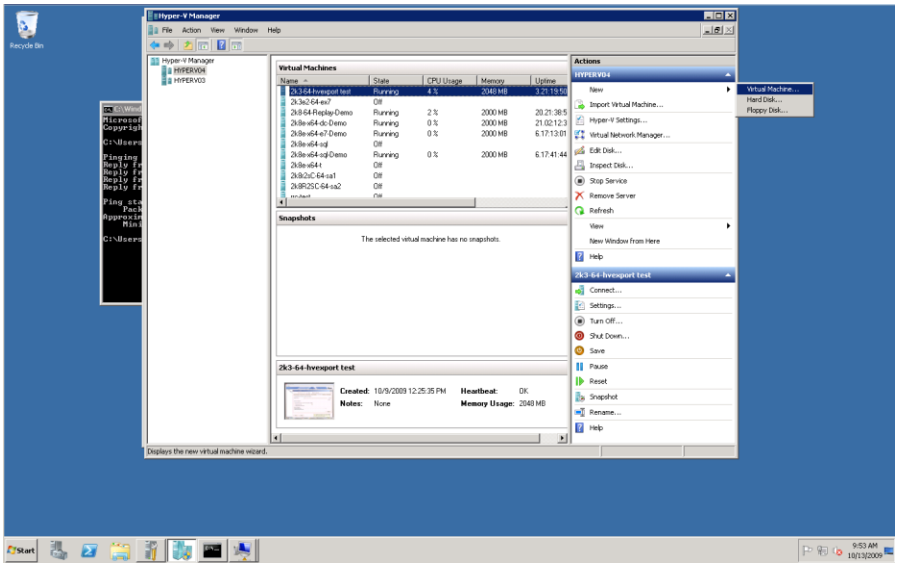
You can now proceed with creating a Replay snapshot of the Windows Server 2003/Windows XP machine. When the snapshot is complete, create a VHD by using the "Create VM" command from the Recovery Points tab and select "Hyper-V R2" as the export type.

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

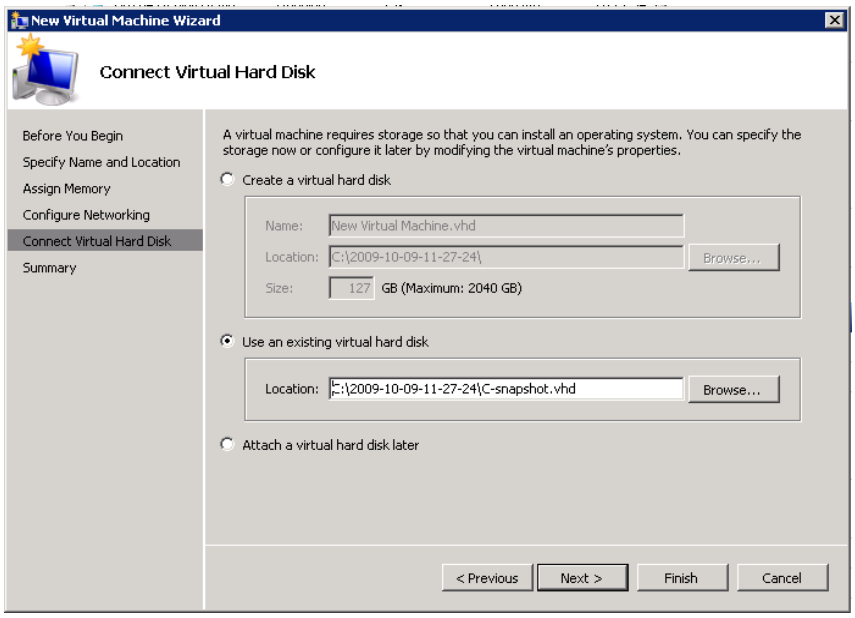
Attaching an Exported VHD

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
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' snaptime '%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$s::srcDestVols': Aborted
5026	Info	Requested to deleted recovery points for source '%1$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$s::sourceName'.
5029	Info	Forcing recovery point check for '%1$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.
5046	Info	Rollup Manager starting rollup
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$s::sourceName'
5070	Info	Restoring snapshot of '%1$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$s::protectedVolumeName' snaptime '%3$s::snaptime' '%4$s::clusterMsg'.
5102	Warning	License '%1$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	${ProductName} respository '%1$s::repositoryDrivePath' has less than %2$u::percentFreeSpace%% free space. To reduce disk usage increase the protection interval and/or reduce the time of the retention policy
5200	Error	Could not start replication service, exception:'%1$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 credentals 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 AppMirror features, including continuous restore. Contact the ${CompanyName} Sales department 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 AppMirror features, including automatic VM export. Contact the ${CompanyName} Sales Department for an updated license key
5209	Error	The license key for '%1$s::sourcename' does not include a license for AppMirror ESX features, including automatic VM export to VMWare ESX hosts. Contact the ${CompanyName} Sales Department for an updated license key
5210	Error	Unable to attach database '%1$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'.
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 replication status for '%1$s::sourceName'. Replication status info will not be available
5247	Error	There was an error getting the replication settings for '%1$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 Recoverypoint check type.
5253	Error	Update of epoch '%1$d::epoch' on volume '%2$s::volume' failed with: '%3$S::errorMessage'.
5254	Error	Attachability tests can not be performed because there are no local SQL Server instances installed on this machine.
5255	Error	Attachability tests can not be performed because the local SQL Server instance has been stopped.
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 ${ProductName} to work around this issue.
6000	Info	Transferring Base Image For Volume '%1$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$s::driveLetters' disabled for the Backup Window
6009	Info	Take FULL Snapshot Of '%1$s::volumeName'
6010	Info	Take 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'.
6046	Info	Deleting association with ${ProductCore}
6100	Warning	One of the change log records for volume '%1$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$s::volume' is to large to map. A new base image will be forced on the volume.
6102	Warning	The VSS writer '%1$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 ${CompanyName} drivers are properly installed.
6200	Error	Maximum limit for Edbs '%1$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 ${ProductName}, please reboot before attempting to a snapshot. If you have already rebooted, please contact Customer Support.
6204	Error	Unable to transfer snapshot of volume '%1$s::volumeElement' due to a timeout or a conflict with a transfer from another machine. Check the log on the ${ProductCore} for details
6205	Error	Error getting SQL Server meta data from the host machine: '%1$s::what'.
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'
9001	Error	This license does not authorize the use of ${ProductName} Recover Anywhere