

SnapManager® 6.0.2 for Microsoft® Exchange

Release Notes

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Topics covered

Topics covered

These release notes describe SnapManager® 6.0.2 for Microsoft® Exchange. The following topics are covered:

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Release summary

SnapManager 6.0.2 for Microsoft Exchange includes several new features and enhancements, and a number of bug fixes. The new features and bug fixes are summarized below and described in detail in the following pages.

New feature summary

SnapManager 6.0.2 for Microsoft Exchange introduces the following new features:

- ◆ Improved backup performance
- ◆ Backup retention management enhancements
- ◆ Gapless Database Availability Group (DAG) backup feature
- ◆ Copy backup support
- ◆ Enterprise monitoring and reporting enhancements
- ◆ Business Continuity Model (BCM) enhancements

Bugs fix summary

Bugs fixed in this release include the following:

- ◆ 298184
- ◆ 349278
- ◆ 371550
- ◆ 382709
- ◆ 388115
- ◆ 388737
- ◆ 388821
- ◆ 392131
- ◆ 446880

Improved backup performance

System performance has improved in SnapManager 6.0.2 for Microsoft Exchange as a result of the following new product capabilities:

- ◆ SnapManager can now simultaneously back up storage groups and databases residing on different storage volumes.
- ◆ The backups available for restore includes only backups that are of interest to the user, thereby saving time during the restore operation.
- ◆ A cache of Snapshot copies available to restore or delete has been added that can be leveraged during the current operation.

Backup retention management enhancements

In releases earlier than Snap Manager 6.0.2 for Microsoft Exchange, the oldest backups were deleted based on a user-specified number of backups to keep, per management group. Once an older backup was deleted, the capability of up-to-the-minute restore on other backup management groups was lost if the option “Retain up-to-minute restore ability for older backups in other backup management groups” was disabled.

If the previously mentioned option was enabled, only the Snapshot copy was deleted, and the related transaction log files were retained in the SnapInfo directory.

However, in the prior scenario, a large amount of storage was consumed to retain the large number of transaction logs.

In SnapManager 6.0.2 for Microsoft Exchange, the retention management algorithm more efficiently limits the number of saved transaction logs based on administrator-specified options: the number of days or number of backups to keep to ensure up-to-the-minute restore ability.

New backup options

The specific “Retain up-to-minute restore ability” backup choices are as follows:

- ◆ Backups generated in the last (days)
- ◆ The most recent (number of backups)
- ◆ All the older backups (do not delete any logs)

Where to specify the new options

You can specify the new options in one of three locations:

- ◆ Backup wizard > Retain up-to-the-minute restore ability for older backups
- ◆ Backup and Verify > Up-to-minute Restore Options
- ◆ Delete Backup > Advanced Options

After you set the new options, other backups outside the specified backups become point-in-time only.

The SnapManager 6.0.2 for Microsoft Exchange graphical user interface (GUI) contains options only for the new backup retention management algorithm; the option in releases prior to SnapManager 6.0.2 for Microsoft Exchange to retain

up-to-the-minute restore ability has been removed. If you run backup or delete operations from the SnapManager 6.0.2 for Microsoft Exchange GUI, the new backup retention method is used.

PowerShell continues to support the NoUtmRestore switch; however, the switch is disabled as soon as you specify values for RetainUtmBackups or RetainUtmDays.

Valid input for UTM-related switches

RetainUtmBackups can have any integer value between 0 and 254.

A float value ≥ 0 for RetainUtmDays is allowed. However, a negative number generates an error message.

If you specify values for both RetainUtmBackups and RetainUtmDays, an error message is generated. However, there is one exception: in PowerShell, if you specify -1 for either RetainUtmBackups or RetainUtmDays, SnapManager ignores the switch. In that case, SnapManager does not generate an error. Instead, it uses the prior backup retention method and takes the default value of NoUtmRestore.

If none of the three UTM-related switches is specified, the prior backup retention method is used with the default value of NoUtmRestore=0 applied.

New registry keys

Three new registry keys have been added under HKEY_LOCAL_MACHINE->Software->Network Appliance->SnapManager for Exchange->Client:

KeepLastNSnapshotUtm REG_DWORD

KeepLastNSnapshotOlderDayUtm REG_SZ

KeepLastNSnapshotOptUtm REG_DWORD

When both KeepLastNSnapshotUtm and KeepLastNSnapshotOlderDayUtm have a valid value, SnapManager uses the value of KeepLastNSnapshotOptUtm to determine if the operation is either day-based or number-based.

KeepLastNSnapshotOptUtm =

0: Number-based

1: Day-based

2: Retain up-to-the-minute restore ability to all the older backups

Three new entries are added to the control file under
<BACKUP_CLIENT_SETTING>:

<BACKUP_SET_TO_KEEP_UTM>

<BACKUP_SET_TO_KEEP_IN_DAYS_UTM>

<DELETE_BACKUPS_OPTION_UTM>

When both BACKUP_SET_TO_KEEP_UTM and BACKUP_SET_TO_KEEP_IN_DAYS_UTM have a valid value, SnapManager uses the value of DELETE_BACKUPS_OPTION_UTM to determine if the operation is either day-based or number-based.

DELETE_BACKUPS_OPTION_UTM =

0: Number-based

1: Day-based

2: Retain up-to-the-minute restore ability to all the older backups

Gapless Database Availability Group (DAG) backup feature (Remote Additional Copy Backup)

In releases earlier than SnapManager 6.0.2 for Microsoft Exchange, when a backup was created from one of the Database Availability Group (DAG) nodes, the logs were truncated on all the other DAG nodes, as well, thereby potentially preventing an up-to-the-minute restore operation if one or more of the truncated logs was not backed up on time.

In addition, the administrator had to decide where the backup would be created, and whether the backup would be on the active database or on replicated databases.

In SnapManager 6.0.2 for Microsoft Exchange, with Remote Additional Copy Backup enabled, backup management in DAG configurations has been simplified, and the administrator does not need to manage where the backup is created.

In addition, data security has been enhanced because any node can have at least one backup that can be used to restore the database in case of server failure, assuming that all databases have copies on all nodes.

Gapless DAG capabilities

With Remote Additional Copy Backup enabled, you can do the following:

- ◆ Set up gapless DAG backup by requesting a copy of the databases to be backed up, using the full backup procedure.

You should not select duplicated copies of the same database for gapless backups. Although duplicate gapless backups work, it can take longer than necessary to create several redundant gapless backups.

You can select a single copy of each database for the gapless backup using one of the following methods:

- ❖ Using tree view, check a single copy of each database.
- ❖ Name the single database copy using the PowerShell `-database` parameter.

Alternatively you can optimize the list of copies with the following database filter options:

- ❖ Only active databases
- ❖ Only passive databases with specific activation preference for backup
- ❖ Only databases on a specific server

- ◆ Enable gapless DAG backup by selecting “Create a copy database backup on other DAG nodes along with current backup.”
- ◆ Select on which nodes the copy-only backups will be performed.
- ◆ For the copy-only backup on other nodes, select the backup retention policy and request that the policy be executed after the copy backup is created.

System procedure for gapless DAG backups

The system follows this procedure in creating backups along with additional remote copy backups:

1. SnapManager creates copy-only backups on those nodes selected for copy backup.
2. SnapManager creates a full backup on the selected databases.
3. SnapManager backs up the logs on the selected nodes.
4. SnapManager makes a request to Microsoft Exchange to truncate the log on the primary backup node.
5. Microsoft Exchange replicates the truncation to the remote replica copies of the database.

Running the gapless DAG backup functionality

To run the gapless DAG backup functionality, either through the SnapManager for Microsoft Exchange MMC or the PowerShell snap-in, perform the following steps:

1. Connect directly to the DAG server.
The functionality is not available if you connect to a member server of the DAG.
2. Select the databases for which you want to create a backup.
Do not select multiple copies of the same database for backup.
3. Go to the Advanced Options window and select the Remote Additional Copy Backup tab.
4. Enable this option by checking “Create additional backup (copy based) on CCR (Cluster Continuous Replication) or DAG remote server(s).”
You can also select either or both of the following options:
 - ❖ Delete backups during additional backups on remote servers

- ❖ If the dataset is enabled, archive backups created on remote servers to secondary storage
5. In the Advanced Backup Options dialog box, select on which server you want to run copy-based additional remote copy backups.
- For best results, select all DAG nodes (this is the default).

Additional considerations for using gapless DAG backup

Here are additional considerations for using gapless DAG backup:

- ◆ If you perform a gapless DAG backup, do not also perform a primary backup of each copy of the database; otherwise, redundant and unnecessary backups are created.
- ◆ You can perform a copy backup on active as well as passive databases.
- ◆ The SnapManager 6.0.2 for Microsoft Exchange copy backup feature (described in the following section) allows you to specify copy backup type as the primary (original) backup type and also have additional remote copy backup enabled (which is also a copy backup type).

PowerShell cmdlet parameters for gapless DAG backup

To create a gapless backup on DAG or CCR servers, use the following parameters for the “new-backup” cmdlet in the SnapManager PowerShell snap-in:

-RemoteAdditionalCopyBackup [**<Boolean>**]

Short form: `remCopyBk`

If databases are replicated to other member servers, a remote additional backup (copy based without log truncation) of the selected databases of the remote nodes is created. This applies only to DAG or CCR server connections.

Default values: `false` = DAG, `true` = CCR

-AdditionalCopyBackupDAGNode **<String[]>**

Short form: `remCopyBkNode`

The names of the DAG nodes where a remote additional (copy based) backup is allowed. If this parameter is not specified it is assumed that all member server nodes are allowed.

Default value: If not specified, all DAG member nodes is assumed.

-RetainRemoteAdditionalCopyBackup **<Integer>**

Short form: `rtRemCopyBk`

The number of remote additional (copy-based) backups to keep on remote nodes. This is used when the backup completes to determine which previous backups to retain.

Default: 1 is the default value.

-RetainRemoteAdditionalCopyBackupDays <Float>

Short form: `rtRemCopyBkDays`

The number of days to keep backups when doing a remote additional (copy based) backup on a remote node. This indicates that the deletion of these additional backups is based on an “older than number of days” policy. Absence of this option means a deletion policy based on retained additional backup count is used instead.

Default value: no default value

-ArchiveRemoteAdditionalCopyBackup [<SwitchParameter>]

Short form: `archRemCopyBk`

Creates an archive of the remote additional (copy based) backup created on the remote cluster member nodes. Include this parameter if you have datasets configured on those nodes and want to archive the remote additional copy-based backup to another secondary SnapVault storage system.

Default value: defaults to `false`

PowerShell example

Example of using remote copy-based gapless backups with the PowerShell:

```
new-backup -Server 'SM-DAG1' -ClusterAware -ActiveDatabaseOnly  
-RemoteAdditionalCopyBackup $true  
-ArchiveRemoteAdditionalCopyBackup  
-AdditionalCopyBackupDAGNode DAG1-NODE1, DAG1-NODE2  
-RetainRemoteAdditionalCopyBackup 4  
-BackupTypeFullBackup
```

This command creates a backup of the active DAG databases and also does a remote additional (copy-based) backup of the databases that are replicated to member servers DAG1-NODE1 and DAG1-NODE2. If datasets are configured on DAG1-NODE1 or DAG1-NODE2 member servers, then SnapVault will create the additional backup on the secondary storage system.

Because clusterAware was requested the system will back up only if this is the owner node.

At most four backups are kept when remote node backups are deleted at the end of each node's additional (copy-based) backup. The primary backup of the databases is a full backup; however, the remote additional backups are a copy-based backup type.

Settings in the control.xml file

Settings related to remote additional copy backup (gapless backup) in the control.xml file used to import and export settings in SnapManager 6.0.2 for Microsoft Exchange:

```
<DELETE_BACKUPS_OPTION_REMCOPYBACKUP> XXXX  
</DELETE_BACKUPS_OPTION_REMCOPYBACKUP>
```

(integer) = 0=no backups will be deleted on the remote nodes,
1=backups will be deleted on the remote nodes

```
<BACKUP_SET_TO_KEEPPREMBACKUP> XXXX </BACKUP_SET_TO_KEEPPREMBACKUP>
```

(integer) = number of backups to keep on the remote node
after a gapless backup is done

```
<BACKUP_SET_TO_KEEP_IN_DAYS_REMCOPYBACKUP> XXXXX.XXXX  
</BACKUP_SET_TO_KEEP_IN_DAYS_REMCOPYBACKUP>
```

(real-float) = days or partial days to keep backups after a
gapless backup is done

```
<HOSTS_REMCOPYBACKUP> SERVERNAME1, SERVERNAME2,  
...</HOSTS_REMCOPYBACKUP>
```

(string) = comma-delimited list of member servers to do
remote copy backup on; if none specified all cluster nodes
will be processed

```
<REQUEST_REMCOPYBACKUP>1</REQUEST_REMCOPYBACKUP>
```

(integer) = 0=no remote additional copy backup will be done
1=remote additional copy backup will be done

Sample code

```
<BACKUP>  
  <BACKUP_CLIENT_SETTING>  
    <DELETE_BACKUPS_OPTION_REMCOPYBACKUP>1</DELETE_BACKUPS_OPTION_REMCOPYBACKUP>
```

```
<BACKUP_SET_TO_KEEP_REMCOPYBACKUP>8</BACKUP_SET_TO_KEEP_REMCOPY
BACKUP>
<BACKUP_SET_TO_KEEP_IN_DAYS_REMCOPYBACKUP>7.0308</BACKUP_SET_TO_KE
EP_IN_DAYS_REMCOPYBACKUP>
<HOSTS_REMCOPYBACKUP>SNAPMGR-11-VM30,SNAPMGR-11-
VM31</HOSTS_REMCOPYBACKUP>
<REQUEST_REMCOPYBACKUP>1</REQUEST_REMCOPYBACKUP>
</BACKUP_CLIENT_SETTING>
</BACKUP>
```

Copy backup support

In releases prior to SnapManager 6.0.2 for Microsoft Exchange, backup choices included only full backup and remote copy backup in a Cluster Continuous Replication (CCR) configuration.

SnapManager 6.0.2 for Microsoft Exchange contains new backup features available as advanced options of the backup dialog box and Backup wizard. You can now do either of two types of backup:

- ◆ Full backup

Choosing this backup type produces a backup of the selected databases and truncates their transaction logs.

- ◆ Copy backup

Choosing this backup type produces a backup of the selected databases but does not truncate their transaction logs.

Copy backup information is not logged into AutoSupport and EMS. You can back up truncated logs with a copy backup, but it is not necessary to do so because these logs are not required for a restore operation.

The same backup operations as full backup also apply to copy backup: for example, backup verification, SnapMirror update, and archive backup using SnapVault with a dataset.

Copy backup PowerShell cmdlet parameters

To specify the primary database backup type, use the following parameter in the SnapManager PowerShell new-backup cmdlet:

-BackupType <(FullBackup, CopyBackup) Enumerated Type>

Short form: `-bkType`

Sets the backup type of full or copy backup. Full backups back up the database and truncate the logs in the process. Copy backups back up the database but do not truncate the Microsoft Exchange database logs.

If this parameter is omitted, SnapManager performs a full backup to the default (defaulting to `-BackupType FullBackup`).

Required? `false`

Position? `False`

Default value: `FullBackup`

Accept pipeline input? `True`
Accept wildcard characters? `false`

Enterprise monitoring and reporting enhancements

Releases earlier than SnapManager 6.0.2 for Microsoft Exchange had no monitoring and reporting capabilities. SnapManager 6.0.2 Microsoft Exchange has the capability to report the results of backup and verification operations using a Windows Application Event Log, e-mail notification (if such notification is enabled), and a SnapManager report file (a text file in the Monitor report folder).

You can enable enterprise monitoring and reporting using the facility accessible from the configuration wizard (Monitor menu) by specifying the following options:

- ◆ Enable or disable monitoring and reporting for backup, verification, or both
- ◆ Select the reporting interval, which is 24 hours by default
- ◆ Set the time of day that SnapManager should start generating and reporting the operational information

How monitoring and reporting works

Here is how monitoring and reporting works:

- ◆ SnapManager records the backup and verification results on the local SnapManager registry key.
- ◆ SnapManager obtains the information from the registry key, assembles it, and creates the report.
- ◆ When the information has been reported, the registry key entries are deleted.

Scope of the reporting and monitoring facility

The scope of the reporting and monitoring facility is limited in the following ways:

- ◆ Enterprise-wide reporting capabilities (for example, summarizing or aggregating operational results from multiple Microsoft Exchange servers) is not possible.
- ◆ You cannot query operational history, but rather only obtain current operational status since the last report.
- ◆ You must enable the feature on each Microsoft Exchange Server for which you want operational information.
- ◆ When you use remote verification, the verification operation applies to the backup created on the local Microsoft Exchange Server. Even if the verification operation is happening on a remote machine, the verification results are reported on the Exchange Server whose backup is being verified.

Clustering considerations

The following considerations apply to clustering situations:

- ◆ For Microsoft Exchange 2001 DAG, the reporting and monitoring feature is enabled for each member server of the DAG configuration.

SnapManager cannot report backup and verification results from all DAG nodes. To enable the feature in a DAG configuration, connect to each individual DAG node and enable the feature only on the node where the backup and verification will actually occur.

- ◆ Microsoft Exchange CCR 2007 works the same way as DAG.

If you do backup only on one particular node, you should enable the option only on that node.

For Shared Disk Exchange Cluster, all nodes of the cluster should have the feature enabled. Internally, SnapManager reports operational results only for the owner node of the cluster. If you want results for all nodes in the cluster, you must enable each manually.

Business Continence Model (BCM) enhancements

Enhancements in SnapManager 6.0.2 for Microsoft Exchange allow a more automated operational business continence environment.

New and enhanced features

Key new and enhanced features include the following:

- ◆ SnapManager automatically preconnects the roots of the volume mount points on the target disaster recovery site.

Administrators using volume mount points in releases earlier than SnapManager 6.0.2 for Microsoft Exchange had to manually create and pre-connect the LUNs with the roots of the mount points.

The business continence functionality of SnapManager 6.0.2 for Microsoft Exchange automatically preconnects the roots of the mount points to the disaster recovery site, making the workflow more automated and consistent.

When using this feature you should ensure that these conditions are all true:

 - ❖ The roots of the mount points must reside on the NetApp volume; otherwise, manual preconnect is still required.
 - ❖ The volumes containing the mount points must have a SnapMirror relationship established.
 - ❖ The roots of the mount points must reside on volumes separate from the database/logs/snapInfo directory.
- ◆ SnapManager automatically adds dependencies between Microsoft Exchange database and disk cluster resources.

In releases prior to SnapManager 6.0.2 for Microsoft Exchange, after a BCM failover, the administrator had to manually add dependencies between the Microsoft Exchange database cluster resource and the corresponding disk cluster resources.

In SnapManager 6.0.2 for Microsoft Exchange, this step has been automated; after the system reinstalls the Microsoft Exchange instance, the required dependencies are added programmatically.
- ◆ SnapManager automatically creates Microsoft Exchange store maintenance registry entries (for example, background cleanup) after failover.

In releases prior to SnapManager 6.0.2 for Microsoft Exchange, the system did not automatically re-create these entries, and warnings were generated during mounting of the Microsoft Exchange database store.

In SnapManager 6.0.2 for Microsoft Exchange, values are automatically created in the registry for Background Cleanup, Background Search, and General Event Log.

- ◆ SnapManager automatically detects the available network cluster resources on a Windows 2008 cluster.

In releases prior to SnapManager 6.0.2 for Microsoft Exchange, the administrator needed to manually type the network resource name during creation of the business continuance plan, and a possible consequence of typing the name incorrectly was failed validation and failover.

In the SnapManager 6.0.2 for Microsoft Exchange, the administrator can select the name from a picklist created by querying network resources, thereby avoiding typographical errors.

Bugs fixed in this release

The following table lists bugs from releases prior to SnapManager 6.0.2 for Microsoft Exchange that have been fixed in the current release.

Bug ID	Description
298184	Title: Jobs were sometimes hung by an external event like a storage system reboot or the Microsoft Eseutil.exe utility application not responding. Description: The Cancel command from the Current Job Status window or the cmdlet Cancel-Job was unable to cancel such hung jobs.
349278	Title: A System.OutOfMemo error occurred when querying FlexClone status for all Microsoft Exchange storage system volumes. Description: Collision and concurrency detection was not being properly processed, and as a result multiple verification jobs could not run simultaneously. In addition, backup and verify operations could not run at the same time even when flexible licensing was enabled. This problem has been fixed in SnapManager 6.0.2 for Microsoft Exchange.
371550	Title: If there were a large number of log LUNs on separate volumes, backups sometimes took a long time to complete. Description: When Exchange databases used a large number of storage volumes due to LUN and Snapshot copy enumeration, the backup and restore performance of SnapManager was negatively affected. Performance enhancements in SnapManager 6.0.2 for Microsoft Exchange have fixed this problem.
382709	Title: It was not possible to mount the recovery storage group during SnapManager initialization in SnapManager 6.0 for Microsoft Exchange. Description: SnapManager 5.0 for Microsoft Exchange (and earlier releases) tried to mount the recovery storage group during the SnapManager service initialization, but this was no longer possible in SnapManager 6.0 for Microsoft Exchange. The problem has been fixed in SnapManager 6.0.2 for Microsoft Exchange.

Bug ID	Description
388115	Title: It was sometimes impossible to restore a remote backup to a recovery storage group or a recovery database on a remote server. Description: The following error sometimes occurred when administrators restored datasets to a remote server: Unable to get archived backup id for mounting LUN in snapshot copy on secondary storage. The restore report contained the line “Getting remote backup ID for dataset [(null)] with Backup Version [0]...” to indicate the dataset name, required to retrieve the backup ID or version from the Protection Manager (or DataFabric Manager) server, was not found. The error sometimes occurred when administrators used the Restore wizard and selected all these options: Restore to Recovery Storage Group/Database, Restore to a remote machine, and Restore from a dataset backup or archived backup. The error sometimes also occurred when administrators performed a dataset restore operation to a different machine from the PowerShell cmdlet, using the RestoreArchivedBackup parameter.
388737	Title: Administrators had to provide a new database name when restoring a backup copy created on a different server on Exchange Server 2010. Description: A new database name needed to be provided when restoring a backup copy created on another server, because Exchange Server 2010 did not allow to administrators to restore to one server, using the same name, a database created on another.
388821	Title: Snapshot copies did not always get deleted on a replica node of the DAG. Description: It was possible that the number of backup sets for databases in a DAG might differ. If administrators backed up only active or only passive databases, they sometimes had different backup counts for a database in the DAG because SnapManager did not always back up all databases in the DAG.
392131	Title: Upgrading from SME6.0X1 to SME6.0X2 or SME6.0 sometimes produced an error. Description: The error sometimes occurred when the administrator launched the SnapManager Microsoft Management Console (MMC) or run a SnapManager PowerShell cmdlet.

Bug ID	Description
446880	Title: In CCR environments, SnapManager SMBR restore was looking for Snapshot copies on the wrong volume. Description: In releases prior to SnapManager 6.0.2 for Microsoft Exchange, SMBR obtained the backup server name from the SnapInfo file. However, in CCR environments the passive node name was not specified in the SnapInfo file, and, as a result, SMBR experienced an error when trying to mount a Snapshot copy for a CCR passive node. In SnapManager 6.0.2 for Microsoft Exchange, the code has been modified to detect a CCR configuration, and when connected to a CCR passive node, the node name is used to identify the backup server.

Installation and upgrade information

Downloading SnapManager

Download the SnapManager 6.0.2 for Microsoft Exchange software from the NOW site.

Note

The SnapManager software is not available on a CD.

Upgrading to SnapManager 6.0.2

If you are upgrading to SnapManager 6.0.2 for Microsoft Exchange from a previous release of SnapManager for Microsoft Exchange, read the information in this section.

Upgrading from SnapManager 6.0

If you are upgrading from SnapManager 6.0 for Microsoft Exchange, follow the instructions in the *SnapManager 6.0 for Exchange Installation and Administration Guide*.

Upgrading from SnapManager 4.0 and SnapManager 5.0

If you are upgrading from SnapManager 4.0 for Microsoft Exchange or SnapManager 5.0 for Microsoft Exchange, close the SnapManager application prior to upgrading to the newer version.

Upgrade to SnapManager 6.0.2 for Microsoft Exchange by installing the new product.

SnapMgrService account: When you are upgrading from SnapManager 4.0 for Microsoft Exchange, you must set the SnapMgrService account to a Windows domain account that has the required rights to manage Microsoft Exchange databases.

Fractional space reserve monitoring: SnapManager 4.0 for Microsoft Exchange and SnapManager 5.0 for Microsoft Exchange have fractional space reserve monitoring enabled by default. If you are upgrading to SnapManager 6.0.2 from SnapManager 4.0 or SnapManager 5.0, fractional space reservation remains enabled. Otherwise, it is disabled by default. If you are not using fractional space reservation on the storage system volumes that contain LUNs that are used for Microsoft Exchange, you can disable monitoring to improve general system performance.

Upgrading in unattended mode

You can upgrade SnapManager in unattended mode by running the software installation script from a command line.

SnapManager installation media	Application to be run
Software package downloaded from the network	SME6.0_x86.exe or SME6.0_x64.exe (the name of the software package itself)

Usage restrictions and known issues

Usage restrictions

SnapManager 6.0.2 for Microsoft Exchange does not support the following uses:

- ◆ Creation and restoration of backups of Microsoft Exchange databases that are stored on storage devices provided by companies other than NetApp
- ◆ Restoration of Microsoft Exchange Server 2003, Microsoft Exchange Server 2007, and Microsoft Exchange Server 2010 databases to an alternate location
- ◆ Use on the Windows Server 2008 IA-64 editions
- ◆ Concurrent verification of up to four jobs with only one verification job per *source* Exchange server and not four verification jobs per Exchange server
- ◆ Configuration of datasets outside member servers of the Database Availability Group (DAG)
- ◆ Configuration of verification on SnapMirror destination through the DAG connection, although you can configure verification on SnapMirror destination when you connect to a member server of the DAG
- ◆ Use of the Delete window outside member servers of the Database Availability Group (DAG)
- ◆ Running Microsoft Exchange cmdlets from the SnapManager shell:
In SnapManager 6.0 for Microsoft Exchange and later, the default SnapManager PowerShell will not include Microsoft Exchange Management Shell snap-in.

You will get an error if you run Microsoft Exchange cmdlets from the SnapManager shell. To run Microsoft Exchange cmdlets, use the Microsoft Exchange Management shell. If you are running Microsoft Exchange 2007 and you want to run Exchange cmdlets from the SnapManager shell, manually edit the smeshell.psc1 file and add the following tag to the psc1 file:

```
<PSSnapInName="Microsoft.Exchange.Management.PowerShell.Admin"
/>
```

Known issues and workarounds

The following table lists issues known to exist in SnapManager 6.0.2 for Microsoft Exchange.

Be sure to read the key points described in this table before you do any of the following:

- ◆ Create a recovery storage group
- ◆ Upgrade Microsoft Exchange 2007 to a new service pack
- ◆ Schedule a SnapManager job in a clustered configuration

For the latest information about workarounds, launch your Web browser, navigate to <http://now.netapp.com/NOW/cgi-bin/bol>, type the bug ID into the Enter Bug IDs field, and click Go.

Bug ID	Description and workaround
107370	Title: SnapManager backup fails due to system adjustments for Daylight Savings Time (error 0x800700b7) Description: After the Exchange server adjusts from Daylight Savings Time to Standard Time, the scheduled backup job might fail, resulting in one of the following outcomes: ◆ The SnapInfo folder rename operation, if the generic naming convention is used. ◆ An invalid SnapInfo folder name and Snapshot copy name, if the unique naming convention is used. Workaround: Create another backup manually, or schedule a one-time backup after 2 a.m. SnapManager uses a timestamp to track backups. During the one-hour period after Daylight Savings Time ends, the same time appears twice on the system. If the backup was scheduled within that period, it is run twice, and the second one fails due to the existence of duplicate timestamps.

Bug ID	Description and workaround
239697	Title: SnapManager database migration fails with an error stating that one or more database files belonging to the group could not be found. Description: When you use the Configuration wizard to migrate an Exchange 2003 database from one location to another location, the migration fails. An error message appears from the Microsoft Collaboration Data Objects (CDO) for Exchange Management API call. The migration fails when there is more than one running domain controller on the same subnet of the Exchange server. Workaround: If there are multiple domain controllers on the same subnet of the Exchange server, make sure that only one domain controller is running. Shut down all but one domain controller before you run the Configuration wizard. Note _____ This is a problem in the Microsoft CDO for Exchange Management in Exchange 2003. _____

Bug ID	Description and workaround
252743	Title: SnapManager attempts to migrate the Exchange Server 2003 Message Transfer Agent (MTA), even if it has been disabled. Description: SnapManager does not check to see whether the MTA has been disabled or deleted when the Configuration wizard is run, and attempts to migrate it. As a result, the configuration fails. Workaround: Temporarily reenab the MTA. For stand-alone Exchange systems, open the Windows Control Panel and set the MTA Service to Automatic or Manual. For Exchange systems running with a clustered configuration, re-create the MTA cluster resource by re-creating all the Exchange cluster resources as follows: 1. Run the Cluster Administrator and take the cluster resource group offline. 2. Right-click the System Attendant cluster resource and select Delete. Result: This deletes the System Attendant resource and all other Exchange cluster resources. Note _____ Do not right-click the cluster resource group name and select "Remove Exchange Server" because this will remove the Exchange virtual server from the Active Directory and you cannot recover it. _____ 3. After the Exchange cluster resources have been deleted, add the network name and IP address resources, along with any other resources that were included along with the Exchange resources. 4. Create a new System Attendant cluster resource in the same cluster resource group. Result: All other Exchange cluster resources are re-created, including the MTA. 5. Run the Configuration wizard.

Bug ID	Description and workaround
297030	Title: Procedure for changing the protection policy for storage groups. Description: If you have datasets configured in your system, and you want to change a protection policy that is already associated with a dataset, follow the procedure below. Procedure: You cannot change the policy using SnapManager Configuration wizard. You must change the policy using the NetApp Management Console data protection capability. For more information on changing the policies, see the relevant documentation for NetApp Management Console data protection capability.
298826	Title: A full backup job fails if the integrity verification server name is not defined in the Database Verification Settings dialog box. Description: If the integrity verification server name is not defined in the Database Verification Settings dialog box, a full backup job with integrity verification fails, resulting in an error message. The backup job is completed, but the integrity verification fails. Workaround: Type the valid integrity verification server name in the Database Verification Settings dialog box.
298887	Title: When a full backup job and a deferred integrity verification job run concurrently, the deferred integrity verification job fails. Description: When a full backup job and a deferred integrity verification job run concurrently, the Snapshot copy that has a generic name is renamed by the source backup server. This results in the failure of the deferred verification job or the verification of the Exchange database and logs the wrong Snapshot copy. Workaround: Use only the unique (timestamp) naming convention for a new backup and not the generic (_recent) naming convention. Note _____ If you must use the generic naming convention, schedule the full backup job and the deferred integrity verification job so they do not overlap. _____

Bug ID	Description and workaround
322235	Title: Mount point directories are not deleted if mounting of a Snapshot copy fails during verification. Description: If mounting of Snapshot copy fails, SnapDrive does not delete the mount point created. Workaround: Manually delete all empty directories with the naming convention "MPDisk0nn" under SnapManager installation directory, normally at C:\Program Files\NetApp\SnapManager for Exchange\SnapMgrMountPoint.
323771	Title: The Configuration wizard does not show Storage Groups when Active Directory (AD) group nesting is used. Description: If the account to be used by SnapManager is only a member of Domain local group and not assigned any exchange administrator roles and permissions, SnapManager is unable to get exchange information. Hence, no information is displayed on the user interface. Workaround: Get information that describes Exchange Server roles, permissions, and security groups from the Microsoft TechNet Web site.

Bug ID	Description and workaround
325550	Title: Business Continuity Recovery fails to recover the Exchange Server after you upgrade Exchange Server 2007 to roll-up 4 or 5. Description: You might see the following error message during the recovery of an Exchange instance: The following server roles will be recovered Clustered Mailbox Server Performing Microsoft Exchange Server Prerequisite Check. Clustered Mailbox Role Checks one or more network interface is DHCP enabled. As a best practice, you should statically assign an IP address to each network interface. The installed version of Exchange Server 2007 may be different from the version you are trying to install. The current installed version is '8.1.393.1', the last installed version was '8.1.240.6'. ... COMPLETED. Configuring Microsoft Exchange Server The offline operation on cluster resource 'exh20clnd20' did not succeed after 3 attempts of up to 30 seconds duration each. The Exchange Server Setup operation did not complete. For more information, visit http://support.microsoft.com and enter the Error ID. Exchange Server setup encountered an error. Setup.com completed with Return code: [1] Recovery of Exchange 2007 Clustered MailBox Server completed with error(s). Workaround: Follow these steps: 1. Open the ADSI Edit utility from any computer in the domain and connect to the domain controller nearest to the Exchange Server. 2. Browse to Services > Microsoft Exchange > <i>organization name</i> > Administrative Groups > Exchange Administrative Group (FYDIBOHF23SPDLT) > Servers > <i>ClusterName</i>. 3. Right-click the cluster name and open the properties box. 4. Scroll down to the attribute "serialNumber," highlight the serial number, and click Remove.

Bug ID	Description and workaround
	5. Edit the text, replacing “Version 8.1 (Build 30240.6)” with “Version 8.1 (Build 30291.2)”. Note _____ If you are editing versions later than RU3, the version numbers might be different.
338093	Title: Do not configure more than 20 storage groups per Cluster Continuous Replication (CCR) node. Description: On Windows 2008, if the number of storage groups exceeds 20, you might encounter some problems when creating the Business Continuance plan. This problem does not occur in CCR on a Windows 2003 Server. Workaround: None Note _____ This problem is due to a Microsoft Windows Management Instrumentation query limitation in such configurations (error: Class object already contains the maximum number of properties.).
355496	Title: Make the SMEService port number configurable for SnapManager 6.0. Description: Make the SMEService WCF port number configurable, in case some application locks in the current default port number 810. Workaround: To override the default port number 810, follow these steps: Add the registry string (text) value and set it to a new port number: SOFTWARE\Network Appliance\SnapManager for Exchange\Server\ServerPort 1. Replace the default port text value 810 with the new port value in the following configuration files from the SnapManager installation directory: ❖ SnapMgrService.exe.config ❖ SMEUISnapin.dll.config ❖ SMEPSSnapin.dll.config 2. Restart SnapManagerService and the SnapManager for Exchange user interface (UI). 3. Make sure that the SnapManager UI can connect to SnapManagerService.

Bug ID	Description and workaround
357313	Title: After a SnapManager restore operation using a backup copy created on Local continuous replication (LCR), migration of both the primary storage group and its LCR copy back to local disk may fail. Description: If you perform a restore operation using a backup created on an LCR storage group, the LCR copy becomes the primary storage group, and the primary storage group starts using the paths of the LCR copy. Because of path change, it is possible that both primary storage group and its LCR copy will have same paths on different drives. If you try to migrate both the primary storage group and its LCR copy back to local disk, path conflict occurs and migration fails with error such as [PowerShell Cmdlet Error]: The production EDB file and the copy EDB file cannot be saved in the same folder. FolderName: 'C:\ProgramFiles\Microsoft\ExchangeServer\Mailbox\LocalCopies\sg1'. Workaround: Migrate the LCR copy to a different local disk or migrate it manually using Exchange tools.
358777	Title: Sometimes the backup operation might fail on multiple systems giving the error: Access to source database 'E1B' failed with Jet error -1811. Description: This is a Microsoft issue that arises when you are using the eseutil utility to verify databases. Workaround: If the verification server is validating only Exchange Server 2007 databases, change the setting to use ChkSgFiles instead of the eseutil utility. However, if you are validating both Exchange Server 2003 and Exchange Server 2007 databases, you might get this error occasionally.
359071	Title: PowerShell deferred verification fails because requested registry access is not allowed. Description: PowerShell deferred verification fails because requested registry access is not allowed. Workaround: On a Windows Server 2008 system with User Access Control enabled, use the menu option Run As Administrator to prevent any access errors related to the Windows Registry or any other Windows server resources.

Bug ID	Description and workaround
373964	Title: Event log failure "log copier was unable to communicate with server" might occur for successful DAG migration. Description: The MSExchangeRepl service logs error events when you run the SnapManager Configuration wizard. The MSExchangeRepl service might log the following error event when SnapManager migrates databases in a DAG configuration: The log copier was unable to communicate with server. The copy of database 'f1\DTC4' is in a disconnected state. The communication error was: An error occurred while attempting to access remote resources. Error: Communication was terminated by server. Data could not be read because the communication channel was closed. The copier will automatically retry after a short delay. Workaround: None. This is the expected behavior. When you run the SnapManager Configuration wizard, SnapManager removes database copies from the DAG, changes the database paths, and adds database copies back to the DAG. During this process the MSExchangeRepl service will log error event logs. Note This problem is due to a Microsoft issue.
376362	Title: DAG level schedule backup does not provide "View Status" in the Current job status. Description: When you select a server in the Scope pane, SnapManager displays the queued and running jobs for that server. The "View Status" element in the Results pane provides a link to the SnapManager report associated with the running job. However, when you connect to the DAG while a job is running and click "View Status," you get an error. Workaround: Go to the Reports directory and manually view the report files after the job is done, watch the job output while the job is running, select to see the last-job-run dashboard, and so on.

Bug ID	Description and workaround
377987	Title: The Configuration wizard might not clean up the database files after CCR database migration. Description: In a CCR configuration, the SnapManager Configuration wizard might not delete old database files from their original location after the storage groups are migrated to their new location. Because the original location of the storage groups still contains old database and log files, the migration of storage groups back to their original location fails, with "Error Code: 0x80070050 The file exists." Workaround: Delete old database files from their original location after SnapManager migration.
378580	Title: SnapManager restore fails for a point-in-time restore operation on Exchange Server 2010 due to log validation. Description: During a point-in-time restore operation, by default SnapManager verifies transaction logs by mounting a log LUN from a Snapshot copy. The verification sometimes fails because SnapManager cannot find all required logs from the mounted Snapshot copy. As a result, the restore operation fails. Workaround: Disable the "Transaction log sequences and database metadata verification before restore" option during the restore operation.
379354	Title: The Business Continuity operation fails because the client-side license check fails. The required protocol is not licensed. Description: If a recovery server does not include a local active Exchange server, you cannot enter a host-side license for SnapManager for Exchange on destination nodes unless you perform a fresh install operation. Workaround: Enter the license manually in the registry. The registry key for the per-server license is as follows: HKEY_LOCAL_MACHINE\SOFTWARE\Network Appliance\SnapManager for Exchange\Server\LicenseKey(REG_SZ)
382115	Title: The SnapManager Configuration wizard at the DAG level fails if disk space is not sufficient to hold the migrated SnapInfo directory. Workaround: Make sure there is enough disk space on all nodes during the DAG migration.

Bug ID	Description and workaround
383873	Title: A Restore backup with the "Cancel conflicting backup that is in progress" option does not cancel scheduled backup jobs. Description: When you run a restore operation with the option to cancel a conflicting backup that is in progress, the scheduled backup job is not cancelled automatically. The "Cancel conflicting backup that is in progress" is an option available through the "Verify Options" window of the Restore wizard. Workaround: Cancel the conflicting backup job using the SnapManager user interface or the delete-backup cmdlet.
385259	Title: Microsoft hotfix is required for Hyper-V environments. Description: Some problems may occur when you back up or restore Hyper-V virtual machines. If you run Exchange in a Hyper-V environment, and you use SnapManager to back up the Exchange, the application backup operation in the virtual machine is affected by the virtual machine backup operation. This could lead to truncated logs and loss of data. Workaround: Follow these steps: 1. Install Microsoft hotfix 975354. 2. Set the registry key for Volume Shadow Copy Service (VSS) to disable Hyper-V host backups. Set the registry value to the following: [HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Virtualization\VssRequestor]"BackupType"=dword:00000001
386583	Title: A DAG scheduled job finishes well before the actual backups. Description: Scheduled jobs might be shown as finished or completed while the actual backups are still in progress and not completed. Workaround: Either click "View Status" for the restore operation and examine the SnapManager report or review the notification e-mail messages.

Bug ID	Description and workaround
387321	Title: The Business Continuity plan for storage shows an incorrect initiator. Workaround: While creating a Business Continuity plan, SnapManager shows initiators for NetApp storage. Confirm that the initiator has a valid mapping to the Data ONTAP storage device. The plan fails if invalid mappings are set. Note _____ See SnapDrive documentation for further assistance in setting the proper mappings. _____
387615	Title: First-time CCR backup does not initialize the passive node dataset. Description: After you create datasets for both CCR nodes and back up the CCR active node with the advanced "Archive copy database backup to secondary storage" option, the archiving process on the passive CCR node might be delayed or might not happen. Under these circumstances, the dataset protection status for the passive CCR node might show up as "uninitialized." Workaround: Fail over the CCR cluster and rerun the backup operation with archiving.
388821	Title: Snapshot copies might not get deleted on a replica node of the DAG. Description: It is possible that the number of backup sets for databases in a DAG might differ. If you back up only active or only passive databases, you might have different backup counts for a database in the DAG because SnapManager might not back up all databases in the DAG. Workaround: Add the following registry key on the node of the DAG on which you want SnapManager to always keep the same number of backup sets: "NoVerifyDeleteOnBackup", REG_DWORD and set its value to "1" under: HKEY_LOCAL_MACHINE\SOFTWARE\Network Appliance\SnapManager for Exchange\Server\
388864	Title: The DAG SnapManager reconnect operation might fail after a cluster failover. Description: After moving the active cluster node from one machine to the other, the SnapManager user interface might lose the active communication connection with the active SnapManager server. Workaround: Restart the SnapManager user interface to reestablish the connection.

Bug ID	Description and workaround
389015	Title: SnapManager 6.0 supports only DataFabric Manager (patch release) version 3.8.
391641	Title: The Exchange 2010 DAG requires a DNS service. Description: SnapManager 6.0.2 for Microsoft Exchange requires a record present on the DNS Server for the name of the DAG. Workaround: Make sure the DNS service is active on the Windows domain with Exchange 2010 DAG and a DNS entry has been created for the DAG itself. If the entry has not been created, the administrator must create it manually.
422973	Title: SnapManager error 0xC00413CA is generated: SnapManager detected the following Microsoft Exchange writer error. Workaround: Retry the SnapManager operation.

Changes to published documentation

The following information about SnapManager 6.0.2 for Microsoft Exchange should be used in conjunction with the documentation (*Installation and Administration Guide*, online Help, and CLI Help) provided with this release of SnapManager.

Invalid parameters for restore-backup cmdlet

The list of parameters supported by the restore-backup cmdlet includes, among others, ArchiveBackup, RestoreArchive, and ProxyServer.

Do not use these parameters with the restore-backup cmdlet because they are invalid and are not supported by the cmdlet.

Correction to installation and upgrade information

The installation and upgrade chapter of the *SnapManager 6.0 for Exchange Installation and Administration Guide* mentions that you can install the SnapManager software either from the CD-ROM that comes packaged with your media kit or by downloading the software from the NOW site. This information is incorrect.

You must download the SnapManager software from the NOW site. The SnapManager software is not available on a CD.

Correction to SnapManager for Exchange limitations information

The SnapManager overview chapter of the *SnapManager 6.0 for Exchange Installation and Administration Guide* mentions that you cannot restore individual mailboxes or public folders. This information is incorrect.

Certification for Windows Server Logo

Certification for Windows Server Logo

NetApp signed the SnapManager 6.0.2 for Exchange Microsoft Installer (MSI) package but not the .NET assemblies in it intentionally. This was done to avoid a known issue of the .NET framework loading signed assemblies on systems that are not connected to the Internet. For more information, see <http://support.microsoft.com>.

SnapManager 6.0.2 custom actions

The following table lists and describes custom actions implemented in the SnapManager 6.0.2 for Microsoft Exchange MSI package.

Custom action	Description
AbortInstallation	Generates a popup error message and aborts installation.
AbortInstallation_0	Generates a popup error message and aborts installation.
AbortInstallation_1	Generates a popup error message and aborts installation.
AbortInstallation_2	Generates a popup error message and aborts installation.
AbortInstallation_3	Generates a popup error message and aborts installation.
CheckInstalledProductVersion	Checks the installed product version to set the default FSR monitoring registry value.
CheckMMC30	Checks the existence of the file microsoft.managementconsole.dll. If this file does not exist, aborts the installation.
CheckMSIVersion	Checks if the version of msixec.exe and msi.dll is higher than 3.1. If not, aborts the installation.
CheckNetFrameworkVersion	Checks if .Net Framework 3.5 is installed. If not, aborts the installation.
CheckPowerShellVersion	Checks if Microsoft PowerShell 1.0 is installed. If not, aborts the installation.
ClusterRegRestore	Restores Cluster Registry Keys from the temporary file.
ClusterRegSave	Saves Cluster Registry Keys into a temporary file.

Custom action	Description
CreateBCFolderandNetShare	Creates NetShare in the Business Continuation folder.
CreateJobManagement Registry Value	Creates the registry key and value required by job management.
CreateSMDebugFolder	Creates a subfolder for a debug trace.
Custom_Action1	Debugs
DeleteLegacyFile	Deletes the files from older versions of the product but that were removed in this version and also deletes some .Net tracing files.
DeleteOldShortcut	Deletes the shortcut to the old version of the product, because the company name was added in the path.
DeleteRegKey	Delete the legacy SnapManager registry key.
fix_AllUsers	Resets ALLUSERS to NULL.
GetInstallDir	Gets <productnam>1.1 or an earlier installation directory from the registry value of SchedExePath.
GetLicenseKey	Gets the SnapManager per-server license key from the registry.
GetSMEUserIdentity	Gets the user name and password set by SnapManager as RunAs user.
GetSVCUserName	Gets a SnapDrive service account.
IsInstallationRunning	Checks if another SnapManager for Exchange installation instance is running. If so, aborts the installation.
IsSMESrvrRunning	Checks if the SnapManager server is still running. If so, aborts the installation.

Custom action	Description
LicenseAgreementMsg	Displays the license agreement in a message box during an unattended install.
LicenseValidate	Validates the license key entered by the user.
NetTcpPortSharingServiceEnable	Enables the NetTcpPortSharing service if it is disabled.
NetTcpPortSharingServiceStart	Starts the NetTcpPortSharing service.
NetTcpPortSharingStartTypeWarning	Displays a warning message about changing the start type of NetTcpPortSharing service.
OldProductFound	Displays a warning message if an old version of SnapManager was installed.
OldVLDMgrFound	Sets a warning message if an old version of SnapDrive was installed.
RemoveBCNetShare	Removes the NetShare instance created in a Business Continuity folder.
RemoveReportFolder	Removes the report folder and the subfolder inside.
RemoveReportFolderShare	Removes the NetShare created in the report folder.
RemoveReportFolderWarning	Displays a warning when the option to remove a report folder is clicked in the user interface.
RemoveReportFolderWarning	Deletes the SnapManager installation directory if it is empty.
RemoveSnapManagerFolder	Removes the SnapManager installation folder.
RemoveSnapManagerSubFolders	Removes the FractSpaceData, Debug and SnapMgrMountPoint folders created by SnapManager.

Custom action	Description
RenameSMERegKey	Removes "2.0" from the registry key "SnapManager for Exchange 2.0"
SelectSvcUser	Not used.
SetATTENDEDFLAG	Sets the ATTENDEDFLAG property to indicate UI install.
SetFileVersionInReg	Sets the file version in the registry.
SetNoReboot	Sets REBOOT to ReallySuppress.
SetStringToProperty	Gets a string from the String table and sets it to the public property.
SetUseCheckSgFilesVerify	Checks if the ChksgFiles.dll file exists. If so, sets the registry UseCheckSgFilesVerify to 1.
SetVersionInMMCSnapIns	Sets the version number and build timestamp in SMEUISnapin and SMEBCSnapin.
SMEsSrvrpsUnRegister	Unregisters the SnapManager COM server proxy.
SMEsSrvrRegister	Registers the SnapManager COM server.
SMEsSrvrUnRegister	Unregisters the SnapManager COM server.
SnapDriveNotInstalled	Sets the property to indicate that SnapDrive is not installed.
SnapManagerConfigFileModify	Replaces #HostName# with SnapMgrService.exe.config.
SnapManagerServiceAccountChange	Updates the SnapManagerService account with the specified user credentials.
SnapManagerServiceAddDependency	Sets the SnapManagerService dependency on NetTcpPortSharing.

Custom action	Description
SnapManagerServiceInstall	Installs SnapManagerService using intallutil.exe.
SnapManagerServiceRemove	Removes the SnapManagerService by using Installscript API ServiceRemoveService().
SnapManagerServiceStart	Starts the SnapManagerService by using the "net start SnapManagerService" command.
SnapManagerServiceStop	Stops the SnapManagerService by using the Install script API ServiceStopService().
SnapManagerServiceUninstall	Uninstalls the SnapManagerService using intallutil.exe.
SnapMgrServicePSUnRegister	Unregisters SnapMgrServicePS.dll.
SnapMgrServiceRemove	Removes the old SnapMgrService service that has been renamed "SnapManagerService."
SnapMgrServiceSetMonitoring	Sets EnableRsrMonitoring to 1 when upgrading from SnapManager 3.2.
SnapMgrServiceStop	Stops the old SnapMgrService by using the install script API ServiceStopService().
SVCValidateAccountInfo	Validates the credentials entered by the user.
SyntaxError	Results in a fatal error if there is a syntax error at the command line.
WaitForSnapManagerProcess	Waits for SnapManagerService process stops.
DLLWrapCleanup	InstallShield custom action.
DLLWrapStartup	InstallShield custom action.

Custom action	Description
ISSetAllUsers	InstallShield custom action.
ISSetupFilesCleanup	InstallShield custom action.
ISSetupFilesExtract	InstallShield custom action.
SxsInstallCA	InstallShield custom action.
SxsUninstallCA	InstallShield custom action.

The following table lists and describes custom actions implemented in the SnapManager 6.0.2 for Exchange MSI package.

Custom action	Description
DCOMPerm	Sets the DCOM permissions.
EventLogLicenseType	Reports the license type to event log - Not used.
SetRemoveFlag	Sets ISREMOVED to 1.
SetSMUserIdentity	Sets SnapManager DCOM server identity.
SMESrvrpsRegister	Registers SMESrvrps.dll.
SnapMgrServicePSRegister	Registers SnapMgrServicePS.dll.
UnRegisterClusterKey	Unregisters the cluster keys.

