

# SnapManager® 6.0.4 for Microsoft® Exchange

## Release Notes

NetApp, Inc.  
495 East Java Drive  
Sunnyvale, CA 94089 U.S.  
Telephone: +1 (408) 822-6000  
Fax: +1 (408) 822-4501  
Support telephone: +1 (888) 463-8277  
Web: [www.netapp.com](http://www.netapp.com)  
Feedback: [doccomments@netapp.com](mailto:doccomments@netapp.com)

Part number: 215-07022\_A0 ur001  
September 2012

# Copyright and trademark information

---

## Copyright information

Copyright © 1994-2012 NetApp, Inc. All rights reserved. Printed in the U.S.

No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

## Trademark information

NetApp, the NetApp logo, Network Appliance, the Network Appliance logo, Akorri, ApplianceWatch, ASUP, AutoSupport, BalancePoint, BalancePoint Predictor, Bycast, Campaign Express, ComplianceClock, Cryptainer, CryptoShred, Data ONTAP, DataFabric, DataFort, Decru, Decru DataFort, DenseStak, Engenio, Engenio logo, E-Stack, FAServer, FastStak, FilerView, FlexCache, FlexClone, FlexPod, FlexScale, FlexShare, FlexSuite, FlexVol, FPolicy, GetSuccessful, gFiler, Go further, faster, Imagine Virtually Anything, Lifetime Key Management, LockVault, Manage ONTAP, MetroCluster, MultiStore, NearStore, NetCache, NOW (NetApp on the Web), Onaro, OnCommand, ONTAPI, OpenKey, PerformanceStak, RAID-DP, ReplicatorX, SANscreen, SANshare, SANtricity, SecureAdmin, SecureShare, Select, Service Builder, Shadow Tape, Simplicity, Simulate ONTAP, SnapCopy, SnapDirector, SnapDrive, SnapFilter, SnapLock, SnapManager, SnapMigrator, SnapMirror, SnapMover, SnapProtect, SnapRestore, Snapshot, SnapSuite, SnapValidator, SnapVault, StorageGRID, StoreVault, the StoreVault logo, SyncMirror, Tech OnTap, The evolution of storage, Topio, vFiler, VFM, Virtual File Manager, VPolicy, WAFL, Web Filer, and XBB are trademarks or registered trademarks of NetApp, Inc. in the United States, other countries, or both.

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. A complete and current list of other IBM trademarks is available on the web at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

Apple is a registered trademark and QuickTime is a trademark of Apple, Inc. in the United States and/or other countries. Microsoft is a registered trademark and Windows Media is a trademark of Microsoft Corporation in the United States and/or other countries. RealAudio, RealNetworks, RealPlayer, RealSystem, RealText, and RealVideo are registered trademarks and RealMedia, RealProxy, and SureStream are trademarks of RealNetworks, Inc. in the United States and/or other countries.

All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such.

NetApp, Inc. is a licensee of the CompactFlash and CF Logo trademarks. NetApp, Inc. NetCache is certified RealSystem compatible.

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. A complete and current list of other IBM trademarks is available on the Web at [www.ibm.com/legal/copytrade.shtml](http://www.ibm.com/legal/copytrade.shtml).

Apple is a registered trademark and QuickTime is a trademark of Apple, Inc. in the U.S.A. and/or other countries. Microsoft is a registered trademark and Windows Media is a trademark of Microsoft Corporation in the U.S.A. and/or other countries. RealAudio, RealNetworks, RealPlayer, RealSystem, RealText, and RealVideo are registered trademarks and RealMedia, RealProxy, and SureStream are trademarks of RealNetworks, Inc. in the U.S.A. and/or other countries.

All other brands or products are trademarks or registered trademarks of their respective holders and should be treated as such.

NetApp, Inc. is a licensee of the CompactFlash and CF Logo trademarks. NetApp, Inc. NetCache is certified RealSystem compatible.



# Topics covered

---

## Topics covered

These release notes describe SnapManager® 6.0.4 for Microsoft® Exchange. The following topics are covered:

- ◆ [“Release summary”](#) on page 2
- ◆ [“Bugs fixed in this release”](#) on page 3
- ◆ [“Installation and upgrade information”](#) on page 9
- ◆ [“Usage restrictions and known issues”](#) on page 11
- ◆ [“Changes to published documentation”](#) on page 21
- ◆ [“Certification for Windows Server Logo”](#) on page 22
- ◆ [“SnapManager 6.0.4 custom actions”](#) on page 23

## Release summary

---

SnapManager 6.0.4 for Microsoft Exchange includes a number of bug fixes. These bug fixes are summarized below and described in detail in the following pages, along with installation and upgrade information, known issues, and documentation corrections.

## Bugs fixed in this release

---

The following table lists bugs from releases prior to SnapManager 6.0.4 for Microsoft Exchange that have been fixed in the current release.

| Bug ID | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 137692 | <p><b>Title:</b> SnapManager for Exchange backup may fail with error: “Failed to create temp result file for eseutil dumping page”</p> <p><b>Description:</b> SnapManager for Exchange backup may fail with the following error in the backup report (excerpt):</p> <p>Retrying to create a temp file...<br/>Failed to create temp result file for eseutil dumping page.<br/>Error Code: 0x80070005<br/>Access is denied.</p> <p>SnapManager uses ESEUTIL to obtain database and transaction log information. This information is stored temporarily in an output file that is located at %systemroot%\system32. The file name for this temporary file is smeESEResultsXXXX.tmp, where XXXX is a random number. SnapManager automatically deletes this file unless ESEUTIL reports an error condition result code during executions and fails to release the open reference to the temporary file.</p> <p>Under rare circumstances, the creation of the .tmp temporary files may conflict with an existing temporary file and result in subsequent backups generating the error listed above.</p> |
| 349278 | <p><b>Title:</b> SnapManager for Exchange reports OutOfMemory errors in the detailed status while verifying databases</p> <p><b>Description:</b> SnapManager for Exchange(SME) reports errors querying the FlexClone state during verification of Microsoft Exchange databases.</p> <p>This occurs when a user requests to verify databases backed up or when they request a standalone deferred verification job.</p> <p>The SME OutOfMemory exceptions are reported only in the PowerShell console progress or in the MMC GUI detailed "Backup Report" tab of the backup progress. The error is not logged in the report files to the hard drive.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                           |

| Bug ID | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 363210 | <p><b>Title:</b> Unable to restore to RSG from unmanaged media</p> <p><b>Description:</b> When you use the unmanaged media to do the restore to RSG, SME is to mount LUN in snapshot, which is not supposed to do.</p>                                                                                                                                                                                                                                                                                                                                |
| 398716 | <p><b>Title:</b> SME sends general information ASUP</p> <p><b>Description:</b> Starting from SME 6.0, SME will always send the general Exchange information to ASUP and log that information to syslog during backup and any other xchange storage groups/databases enumeration operations. This operation is not controlled by SME Notification Settings where you can decide if you want to log event to syslog, or send ASUP, or send only on failure.</p>                                                                                         |
| 422973 | <p><b>Title:</b> SME restore in a DAG may fail if the database to be restored is not active copy of database</p> <p><b>Description:</b> SME restore in a DAG configuration may fail with "Exchange has reported error writer status. Error code: 0x800423f3<br/>VSS_E_WRITERERROR_RETRYABLE: The writer failed due to an error that might not occur if another snapshot is created". You may also see error code -1086 in one of Exchange error event log. This is happening when the database to be restored is not the active copy of database.</p> |
| 447059 | <p><b>Title:</b> The SnapManager for Exchange 6.x (SME) UI may fail unexpectedly when selecting a DAG where mailbox server(s) do not host any databases</p> <p><b>Description:</b> SnapManager for Exchange (SME) MMC UI mail fails when the following conditions are met:</p> <ul style="list-style-type: none"> <li>◆ Running on Exchange 2010 and connected to the DAG (instead of individual DAG member nodes)</li> <li>◆ Selecting DAG nodes that do not contain a database</li> </ul>                                                           |
| 450006 | <p><b>Title:</b> SME backup may fail with "SME Backup FaultException, Error code: 0x80131501" when running on a remote DAG node</p> <p><b>Description:</b> When using SME to backup databases in Exchange 2010 DAG configuration, SME backup may fail with error "SME Backup FaultException, Error code: 0x80131501" in the middle of the backup when SME is performing backup operation, such as coping the log files, on a remote DAG node.</p>                                                                                                     |

| Bug ID | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 496039 | <p><b>Title:</b> SnapManager for Exchange 6.0.2 may hang when doing Remote Additional Copy Backup in an Exchange 2010 DAG</p> <p><b>Description:</b> SnapManager for Exchange (SME) 6.0.2 introduced the ability to create remote additional copy backup (aka, gapless backup) along with primary full database backup in an Exchange 2010 DAG (Database Availability Group) environment.</p> <p>Due to a defeat in the initial SME 6.0.2 release, the backup may hang when Remote Additional Copy Backup option is enabled. Specifically the backup will hang when SME performs Remote Additional Copy Backup on database residing on the owner node of the DAG. This is happening when SME is trying to send notification to the owner node from the node where the primary full backup is performed.</p> |
| 501122 | <p><b>Title:</b> SME 6.0.2 may hang when running verification on non-owner node db backup and the verification server is the owner node of DAG</p> <p><b>Description:</b> In Exchange 2010 DAG configuration, SME integrity verification operation may hang if the verification server is the owner node of the DAG and the backup to be verified is from a database on the non-owner node of the DAG.</p>                                                                                                                                                                                                                                                                                                                                                                                                  |
| 505405 | <p><b>Title:</b> SnapManager email failure with error message: "Failure sending mail. Invalid length for a Base-64 char array"</p> <p><b>Description:</b> This message can be seen whenever an email is sent within SnapManager for SQL or Snapmanager for Exchange. The mailhost is returning extended information; This can be caused by NTLM authentication instead of Kerberos.</p>                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Bug ID | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 518953 | <p><b>Title:</b> When a new Storage Group/Database is added to the existing SnapManager for Exchange (SME) backup management group, the SME backup retention is executed based on the "least amount of backups found" for any Storage Group/Database</p> <p><b>Description:</b> For a backup job that contains two or more Storage Groups SG (or in Exchange 2010, Mailbox Databases) that share a common LUN for Logs and SnapInfo, SnapManager for Exchange (SME) deletes the oldest number of database snapshots from each Storage Group LUN based on the "least number of backups found" algorithm for any of the StorageGroup/Database in the backup group.</p> <p>In a scenario when an Exchange Administrator adds a new SG/Database to an existing Backup Job, and the new SG/Database shares the Log/SnapInfo LUN with the existing SG/Databases, the number of backups for each will become asymmetric and not even. As a result of current SME deletion algorithm system may end up in a temporary situation that snapshots are not being deleted for a time period (despite the retention policy), until the SG/Database with a least amount of backups exceeds the backup group retention number.</p> |
| 519309 | <p><b>Title:</b> SnapManager for Exchange (SME) creates a MountPoint path even if "use drive letter" is set for verification; after verification the MountPoints are not deleted</p> <p><b>Description:</b> Before verification of a backup, SnapManager for Exchange (SME) creates a MountPoint, even if the "Use Drive letter" option is specified in registry. After verification the MountPoints are not getting deleted.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 539447 | <p><b>Title:</b> Getting intermittent error Code 0xc0041379 on clustered environment</p> <p><b>Description:</b> This is an intermittent error found in clustered environments resulting from an internal API error.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 541317 | <p><b>Title:</b> When performing restore of an Active Mailbox Database from a backup made on another copy of the Database, user may experience error 0x800423f3 VSS_E_WRITERERROR_RETRYABLE</p> <p><b>Description:</b> When restoring a Mailbox Database from a backup, it is advisable that the user picks the snapshot which includes the DAG node name of the current active copy of that database.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Bug ID | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 541561 | <p><b>Title:</b> SME Backup Summary EventLogs are not always generated after backup. In case of partialy failed backups event type "Info" instead of "Error"</p> <p><b>Description:</b> In some cases, no or wrong Backup Summary events are created: SME does not generate Event ID 266, except in a few configurations; if there are partial failures in backups, specifically when the remote copy backup fails, SME generates informational event ID 266, instead of error, and, if a FRP backup is cancelled, SME generates an informational event ID of 330 instead of a warning or error event.</p>                                                                                                                                                                                                                                                         |
| 555029 | <p><b>Title:</b> SnapManager for Exchange (SME) may time-out prematurely when running verification on a Remote Server</p> <p><b>Description:</b> When running a deferred verification on the "remote server", SnapManager for Exchange (SME) running on the "source server" initiating the verification request, may time-out prematurely after 15 minutes. The timeout will occur before the verification request has completed. This results in a error report claiming that Administrator has cancelled the operation. An example is shown below:</p> <p>"Error Code: 0xc0041373<br/>The operation was cancelled by the administrator."</p> <p>The problem is the result of setting the default timeout value too low. In this example timeout was set to 900 seconds (15 minutes). This value does not take into account the longer running verifications.</p> |
| 556102 | <p><b>Title:</b> SnapManager for Exchange (SME) may fail to mount eloginfo snapshot, generating error: "Snapshot copy is inconsistent or does not exist" when using Single Mailbox Recovery integration with log recovery</p> <p><b>Description:</b> When using SnapManager for Exchange (SME) with Single Mailbox Recovery integration, the (1) StorageGroup/Database, (2) Logs, and (3) SnapInfo LUNs are on three separate Storage Volumes. When use log snapshot is selected for recovery, the SME/SMBR will attempt to mount the wrong snapshot, and SnapDrive for Windows (SDW) will fail with the error:</p> <p>"The target LUN in Snapshot copy is inconsistent or does not exist and cannot be connected."</p>                                                                                                                                            |

| Bug ID | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 556612 | <p><b>Title:</b> SnapManager for Exchange (SME) creates a MountPoint path even if "use drive letter" is set for verification; after verification the MountPoints are not deleted</p> <p><b>Description:</b> Before verification of a backup, SnapManager for Exchange (SME) creates a MountPoint, even if the "Use Drive letter" option is specified in registry. After verification the MountPoints are not getting deleted.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 590127 | <p><b>Title:</b> SnapManager for Exchange Service crashes during enumeration of lun's in large database migration</p> <p><b>Description:</b> SME Service crashes while enumerating a large number of databases in the configuration wizard. When the customer runs the configuration wizard on the DAG, snapmanger for exchange service crashes on owner node and throws following error dialog message.</p> <p>Error : The communication object, System.ServiceModel.Channels.ServiceChannel, cannot be used for communication because it is in the Faulted state.</p>                                                                                                                                                                                                                                                                                                                                                                                |
| 621833 | <p><b>Title:</b> UTM Logs retention does not work if the retention number is less than backup deletion number</p> <p><b>Description:</b> In backup dialog or wizard, whenever the UTM retention logs number is less than the backup retention number the log folders inside snapinfo folders are not deleted accordingly and so the UTM settings are not honored; for example, during a new backup with retention, if the user sets backup retention as eight and UTM retention as five then after backup completes the user sees eight latest backups in restore wizard and in LOG LUN you see eight sme_snapinfo folders and inside that, all eight "\Logs" folders, but this was not requested as per UTM retention settings. It should have retained eight sme_snapinfo folders and inside that, only the five latest folders will have "\Logs" folders. The rest of them will not have log folders and become PIT restorable Snapshot copies.</p> |

# Installation and upgrade information

---

## Downloading SnapManager

Download the SnapManager 6.0.4 for Microsoft Exchange software from the NetApp Support Site.

---

### Note

The SnapManager software is not available on a CD.

---

## 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 6.0.4 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 6.0.4 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 | 6.0.4_x86.exe or 6.0.4_x64.exe<br>(the name of the software package itself) |

# Usage restrictions and known issues

---

## Usage restrictions

SnapManager 6.0.4 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
- ◆ 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 6.0.4 for Microsoft Exchange.

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

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 322235 | <p><b>Title:</b> Mountpoint directories are not deleted if mounting of a Snapshot copy fails during verification.</p> <p><b>Description:</b> If mounting of a Snapshot copy fails, SnapDrive does not delete the mountpoint created.</p> <p><b>Workaround:</b> Manually delete all empty directories with the naming convention “MPDisk0nn” under SnapManager installation directory, normally at C:\Program Files\NetApp\SnapManager for Exchange\SnapMgrMountPoint.</p>                                                                                                     |
| 323771 | <p><b>Title:</b> The Configuration wizard does not show Storage Groups when Active Directory (AD) group nesting is used.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> Get information that describes Exchange Server roles, permissions, and security groups from the Microsoft TechNet Web site.</p> |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 325550 | <p><b>Title:</b> Business Continuity Recovery fails to recover the Exchange Server after you upgrade Exchange Server 2007 to roll-up 4 or 5.</p> <p><b>Description:</b> You might see the following error message during the recovery of an Exchange instance:</p> <p>The following server roles will be recovered Clustered Mailbox Server</p> <p>Performing Microsoft Exchange Server Prerequisite Check.</p> <p>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.</p> <p>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.</p> <p>Configuring Microsoft Exchange Server</p> <p>The offline operation on cluster resource 'exh20clnd20' did not succeed after 3 attempts of up to 30 seconds duration each.</p> <p>The Exchange Server Setup operation did not complete. For more information, visit <a href="http://support.microsoft.com">http://support.microsoft.com</a> and enter the Error ID.</p> <p>Exchange Server setup encountered an error.</p> <p>Setup.com completed with Return code: [1]</p> <p>Recovery of Exchange 2007 Clustered MailBox Server completed with error(s).</p> <p><b>Workaround:</b> Follow these steps:</p> <ol style="list-style-type: none"> <li>1. Open the ADSI Edit utility from any computer in the domain and connect to the domain controller nearest to the Exchange Server.</li> <li>2. Browse to Services &gt; Microsoft Exchange &gt; <i>organization name</i> &gt; Administrative Groups &gt; Exchange Administrative Group (FYDIBOHF23SPDLT) &gt; Servers &gt; <i>ClusterName</i>.</li> <li>3. Right-click the cluster name and open the properties box.</li> <li>4. Scroll down to the attribute “serialNumber,” highlight the serial number, and click Remove.</li> </ol> |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <p>5. Edit the text, replacing “Version 8.1 (Build 30240.6)” with “Version 8.1 (Build 30291.2)”.</p> <p><b>Note</b> _____<br/> If you are editing versions later than RU3, the version numbers might be different.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 338093 | <p><b>Title:</b> Do not configure more than 20 storage groups per Cluster Continuous Replication (CCR) node.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> None</p> <p><b>Note</b> _____<br/> 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.).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 355496 | <p><b>Title:</b> Make the SMEService port number configurable for SnapManager 6.0.</p> <p><b>Description:</b> Make the SMEService WCF port number configurable, in case some application locks in the current default port number 810.</p> <p><b>Workaround:</b> To override the default port number 810, follow these steps:</p> <p style="padding-left: 40px;">Add the registry string (text) value and set it to a new port number:</p> <p style="padding-left: 40px;">SOFTWARE\Network Appliance\SnapManager for Exchange\Server\ServerPort</p> <ol style="list-style-type: none"> <li>1. Replace the default port text value 810 with the new port value in the following configuration files from the SnapManager installation directory: <ul style="list-style-type: none"> <li>❖ SnapMgrService.exe.config</li> <li>❖ SMEUISnapin.dll.config</li> <li>❖ SMEPSSnapin.dll.config</li> </ul> </li> <li>2. Restart SnapManagerService and the SnapManager for Exchange user interface (UI).</li> <li>3. Make sure that the SnapManager UI can connect to SnapManagerService.</li> </ol> |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 357313 | <p><b>Title:</b> 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.</p> <p><b>Description:</b> 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'.</p> <p><b>Workaround:</b> Migrate the LCR copy to a different local disk or migrate it manually using Exchange tools.</p> |
| 358777 | <p><b>Title:</b> Sometimes the backup operation might fail on multiple systems giving the error: Access to source database 'E1B' failed with Jet error -1811.</p> <p><b>Description:</b> This is a Microsoft issue that arises when you are using the eseutil utility to verify databases.</p> <p><b>Workaround:</b> 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 359071 | <p><b>Title:</b> PowerShell deferred verification fails because requested registry access is not allowed.</p> <p><b>Description:</b> PowerShell deferred verification fails because requested registry access is not allowed.</p> <p><b>Workaround:</b> 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 373964 | <p><b>Title:</b> Event log failure “log copier was unable to communicate with server” might occur for successful DAG migration.</p> <p><b>Description:</b> 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:</p> <p>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.</p> <p><b>Workaround:</b> None.</p> <p>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.</p> <p><b>Note</b> _____<br/> This problem is due to a Microsoft issue.<br/> _____</p> |
| 376362 | <p><b>Title:</b> DAG level schedule backup does not provide “View Status” in the Current job status.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> 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.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 377987 | <p><b>Title:</b> The Configuration wizard might not clean up the database files after CCR database migration.</p> <p><b>Description:</b> 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.</p> <p>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.”</p> <p><b>Workaround:</b> Delete old database files from their original location after SnapManager migration.</p> |
| 378580 | <p><b>Title:</b> SnapManager restore fails for a point-in-time restore operation on Exchange Server 2010 due to log validation.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> Disable the “Transaction log sequences and database metadata verification before restore” option during the restore operation.</p>                                                       |
| 379354 | <p><b>Title:</b> The Business Continuity operation fails because the client-side license check fails. The required protocol is not licensed.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> Enter the license manually in the registry. The registry key for the per-server license is as follows:</p> <p>HKEY_LOCAL_MACHINE\SOFTWARE\Network Appliance\SnapManager for Exchange\Server\LicenseKey(REG_SZ)</p>                                                   |
| 382115 | <p><b>Title:</b> The SnapManager Configuration wizard at the DAG level fails if disk space is not sufficient to hold the migrated SnapInfo directory.</p> <p><b>Workaround:</b> Make sure there is enough disk space on all nodes during the DAG migration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 383873 | <p><b>Title:</b> A Restore backup with the “Cancel conflicting backup that is in progress” option does not cancel scheduled backup jobs.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> Cancel the conflicting backup job by using the SnapManager user interface or the delete-backup cmdlet.</p>                                                                                                                                                                                                                                          |
| 385259 | <p><b>Title:</b> Microsoft hotfix is required for Hyper-V environments.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> Follow these steps:</p> <ol style="list-style-type: none"> <li>1. Install Microsoft hotfix 975354.</li> <li>2. Set the registry key for Volume Shadow Copy Service (VSS) to disable Hyper-V host backups.</li> </ol> <p>Set the registry value to the following:</p> <p>[HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Virtualization\VssRequestor]"BackupType"=dword:00000001</p> |
| 386583 | <p><b>Title:</b> A DAG scheduled job finishes well before the actual backups.</p> <p><b>Description:</b> Scheduled jobs might be shown as finished or completed while the actual backups are still in progress and not completed.</p> <p><b>Workaround:</b> Either click “View Status” for the restore operation and examine the SnapManager report or review the notification e-mail messages.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 387321 | <p><b>Title:</b> The Business Continuity plan for storage shows an incorrect initiator.</p> <p><b>Workaround:</b> 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.</p> <p><b>Note</b> _____<br/> See SnapDrive documentation for further assistance in setting the proper mappings.<br/> _____</p>                                                                                                                                                                                                                               |
| 387615 | <p><b>Title:</b> First-time CCR backup does not initialize the passive node dataset.</p> <p><b>Description:</b> 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.”</p> <p><b>Workaround:</b> Fail over the CCR cluster and rerun the backup operation with archiving.</p>                                                                                                                |
| 388821 | <p><b>Title:</b> Snapshot copies might not get deleted on a replica node of the DAG.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> On the node of the DAG on which you want SnapManager to always keep the same number of backup sets, add the following registry key under HKEY_LOCAL_MACHINE\SOFTWARE\Network Appliance\SnapManager for Exchange\Server\:</p> <p>"NoVerifyDeleteOnBackup", REG_DWORD, value = “1”</p> |
| 388864 | <p><b>Title:</b> The DAG SnapManager reconnect operation might fail after a cluster failover.</p> <p><b>Description:</b> 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.</p> <p><b>Workaround:</b> Restart the SnapManager user interface to reestablish the connection.</p>                                                                                                                                                                                                                                                                                       |

| Bug ID | Description and workaround                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 389015 | <b>Title:</b> SnapManager 6.0 supports only DataFabric Manager (patch release) version 3.8.                                                                                                                                                                                                                                                                                                                                                               |
| 391641 | <p><b>Title:</b> The Exchange 2010 DAG requires a DNS service.</p> <p><b>Description:</b> SnapManager 6.0.3 for Microsoft Exchange requires a record present on the DNS Server for the name of the DAG.</p> <p><b>Workaround:</b> 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.</p> |

## Changes to published documentation

---

There are currently no known changes to the published documentation.

## Certification for Windows Server Logo

---

### **Certification for Windows Server Logo**

NetApp certifies the SnapManager 6.0.4 for Exchange Microsoft Installer (MSI) package but not the .NET assemblies in it intentionally. This is done to avoid the 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 6.0.4 custom actions

---

The following table lists and describes custom actions implemented in the SnapManager 6.0.4 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.                                                                      |

| <b>Custom action</b>                  | <b>Description</b>                                                                                                                   |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| CreateBCFolderandNetShare             | Creates NetShare in the Business Continuanace folder.                                                                                |
| CreateJobManagement<br>Registry Value | Creates the registry key and value required by job management.                                                                       |
| CreateSMDebugFolder                   | Creates a subfolder for a debug trace.                                                                                               |
| Custom_Action1                        | Debugs                                                                                                                               |
| DCOMPerm                              | Sets the DCOM permissions.                                                                                                           |
| 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.                                                                                          |
| EventLogLicenseType                   | Reports the license type to event log - Not used.                                                                                    |
| 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.                                                                                                    |

| <b>Custom action</b>              | <b>Description</b>                                                                                           |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------|
| 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.                           |
| 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 Continuanace 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.                                               |

| <b>Custom action</b>        | <b>Description</b>                                                                             |
|-----------------------------|------------------------------------------------------------------------------------------------|
| RemoveSnapManagerFolder     | Removes the SnapManager installation folder.                                                   |
| RemoveSnapManagerSubFolders | Removes the FractSpaceData, Debug and SnapMgrMountPoint folders created by SnapManager.        |
| 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.                                                                 |
| SetRemoveFlag               | Sets ISREMOVED to 1.                                                                           |
| SetSMUserIdentity           | Sets SnapManager DCOM server identity.                                                         |
| 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.                    |
| SMEsSrvrpsRegister          | Registers SMEsSrvrps.dll.                                                                      |
| SMEsSrvrpsUnRegister        | Unregisters the SnapManager COM server proxy.                                                  |
| SMEsSrvrRegister            | Registers the SnapManager COM server.                                                          |
| SMEsSrvrUnRegister          | Unregisters the SnapManager COM server.                                                        |

| <b>Custom action</b>            | <b>Description</b>                                                                 |
|---------------------------------|------------------------------------------------------------------------------------|
| 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.                       |
| 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.                            |
| SnapMgrServicePSRegister        | Registers SnapMgrServicePS.dll.                                                    |
| 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.                 |

| <b>Custom action</b>      | <b>Description</b>                                                                 |
|---------------------------|------------------------------------------------------------------------------------|
| 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.           |
| UnRegisterClusterKey      | Unregisters the cluster keys.                                                      |
| WaitForSnapManagerProcess | Waits for SnapManagerService process stops.                                        |
| DLLWrapCleanup            | InstallShield custom action.                                                       |
| DLLWrapStartup            | InstallShield custom action.                                                       |
| ISSetAllUsers             | InstallShield custom action.                                                       |
| ISSetupFilesCleanup       | InstallShield custom action.                                                       |
| ISSetupFilesExtract       | InstallShield custom action.                                                       |
| SxsInstallCA              | InstallShield custom action.                                                       |
| SxsUninstallCA            | InstallShield custom action.                                                       |