IBM System Storage SAN Volume Controller

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Software Installation and Configuration Guide – Errata – User-paced Software Upgrade Procedure

Version 4.3.1

November 30, 2009

Table of Contents

About this guide

This guide provides errata information that pertains to release 5.1.0 of the IBM System Storage SAN Volume Controller Software Installation and Configuration Guide.

This guide contains the corrections and additions on a per chapter basis. The Software Installation and Configuration Guide is available at:

<center>http://www.ibm.com/storage/support/2145</center>

Who should use this guide

Before upgrading software on the IBM System Storage SAN Volume Controller, you should review the errata contained within this guide and note the details with respect to your copy of the Software Installation and Configuration Guide.

Last update

This document was last updated: December 9, 2009

Change History

The following revisions have been made to this document:

Revision Date	Sections Modified
November 30th 2009	New section

User-paced Software Upgrade procedure

This feature is new in the 5.1.0 level of SAN Volume Controller software.

Under all previous versions of SVC software (and by default in the current version), upgrading software on SVC nodes is achieved by the user instructing the SVC cluster to upgrade its software. The upgrading of individual nodes is managed by the SVC software. This remains the recommended procedure.

However, to provide more flexibility in the upgrade options, in 5.1.0 SVC introduces the option of greater control of the upgrade process for SVC by giving the user the ability to upgrade each individual node at a time of their choosing.

Introduction

During this procedure the user removes a node from the cluster at a time selected by the user, upgrades the software on it and returns it to the cluster. This is repeated for the remaining nodes until the last node is removed from the cluster. At this point the remaining nodes switch to running the new software. When the last node is returned to the cluster it upgrades so that it too runs the new level of software.

Note: During the execution of this procedure, every node must be upgraded to the same software level. It is not possible to interrupt this procedure part-way through and switch to installing a different software level.

Pre-requisites

This procedure assumes that the following conditions have been met:

- The cluster software is at V4.3.1.10 or higher to allow for user-paced software upgrade.
- The latest SVC PTF release has been downloaded.
- Each I/O Group has 2 nodes.
- Any errors in the cluster error log are addressed and marked as fixed.
- There are no VDisks, MDisks or controllers with a status of degraded or offline.
- The SVC cluster's service mode IP address is correctly configured.
- The cluster 'admin' password is known. If it is not known, then it can be changed at the CLI.
- The SVC configuration has been backed up via the CLI or GUI and the file saved.
- The latest "SVC Software Upgrade Test Utility" has been downloaded, installed and run to verify there are no known issues with the current cluster environment before beginning the node upgrade procedure.

- Physical access to the nodes is available.

The following are not required but should be considered as best practices:
- Stop Metro and/or Global Mirror during this procedure.
- Stop TPC performance data gathering and probes of this SVC cluster.
- Stop any automated scripts/jobs that may try and access the cluster during this procedure.
- Avoid running any flashcopies during this procedure.
- Avoid running any VDisk migrations or formats during this procedure.
- In the GUI check the "Manage/View Progress" panel to ensure that nothing is running.

Preparatory steps

Before upgrading the SVC nodes there are some preparatory steps to be undertaken:

1. Issue this command:

   svcinfo lsnode

   Confirm that all nodes are shown as online.
   Note which node is the configuration node. This node should be upgraded last.
   Note also the name and I/O Group assigned to each node.

2. For each controller, issue this command:

   svcinfo lscontroller <controller_name or controller_id>

   Confirm that each controller has status "degraded" = "no"

3. Verify that all hosts have all paths available to all VDisks presented to them by SVC.

4. Download the IBM2145_INSTALL_X.X.X.X package for the PTF level you wish to install from the IBM 2145 support site.

5. Make a copy of the IBM2145_INSTALL_X.X.X.X package and rename the file **IBM2145_REMOTE_UPGRADE**

6. Use the standard procedures to upload this package onto the SAN Volume Controller configuration node, as if preparing for a software upgrade. This file is automatically deleted from a node which is rebooted or upgraded so if the

configuration node is rebooted or upgraded before all other nodes have been upgraded you will need to repeat this step.

7. Record the front panel ID of the node that the IBM2145_REMOTE_UPGRADE package is uploaded to.

Upgrading all nodes except the configuration node

Using the output of svcinfo lsnode as a guide, select the first node to be upgraded. This must **not** be the configuration node.

1. Check that all hosts have all paths available to VDisks presented to them by SVC. If not, wait up to 30 minutes and repeat the check. If some paths are still unavailable, investigate and resolve this before continuing the SVC software upgrade.

2. Verify that any mirrored VDisks are synchronized by issuing the command:

    svcinfo lsvdisk

    and verifying that every mirrored VDisks has a value of "yes" in the "sync" field.

3. Issue the following command to remove the node from the cluster:

    svctask rmnode <node_name or node_id>

4. Verify that the node is no longer a member of the cluster:

    svcinfo lsnode

5. On the front panel of the node, press the down button until the "Version:" panel is displayed. This shows the V.R.M.F (e.g. 4.3.1.9) of the software that is currently installed on the node.

6. Press the right navigation button until the "Build:" panel displays. Then press and hold the up button, press and release the select button, and then release the up button. This causes the SAN Volume Controller node to search for the upgrade package that you previously uploaded to the configuration node and copy it to this node.

7. The node will restart and upgrade the software on the node, and the front panel will cycle through a number of Boot codes (defined in the *IBM System Storage SAN Volume Controller: Troubleshooting Guide*). Part way through the installation, the Front panel will display "Booting 384 *<front panel id>*". The front panel id indicates the node which is providing the upgrade package and

should correspond to the front panel id of the configuration node. If the front panel ID of the donor node does **not** match the expected front panel ID, the IBM2145_REMOTE_UPGRADE file is being copied from the wrong node. Locate the node with the reported front panel ID and remove the redundant software package using the command:

> svctask cleardumps –prefix
> /home/admin/upgrade/IBM2145_REMOTE_UPGRADE *<node id or name>*

Once the redundant software package has been removed, repeat the preparatory steps and resume this section at step 3 to retry the node upgrade.

8. When the node upgrade is completed, the front panel will display "Cluster: <blank>". If it does not show "Cluster:" contact IBM support for assistance.

9. On the front panel of the node, press the down button until the "Version:" panel is displayed. Verify that this shows the new level of software that you wish to install on the node.

   If the software level has not changed or has changed to an unexpected V.R.M.F., the upgrade has either failed to discover a suitable upgrade package or it has discovered an unexpected upgrade package. Verify or correct the following requirements and then retry the procedure:

   a. The special upgrade package still exists on the configuration node (Run the 'svcinfo lssoftwaredumps' command to check).
   b. The only node in the entire SAN fabric that contains an upgrade file named IBM2145_REMOTE_UPGRADE is the configuration node.
   c. The WWNN of the node is set correctly
   d. The fabric contains zoning to allow the node to log in to the node that contains the special upgrade package.

   If you are unable to complete the software upgrade successfully, contact IBM support for assistance.

10. Set the node into upgrade mode. This prepares the node for addition to the cluster, preventing the normal automatic downgrade of the node software to match the cluster software level:

   a. On the front panel of the node, press the down button until the "Node:" panel is displayed. Then use the right navigation button to display the "Status:" panel.

b. Press and hold the up button, press and release the select button and then release the up button. This selects the special upgrade mode. The panel will display "Set Upgrade?"

c. Press Select to confirm and enter the upgrade mode. The front panel will display "Node Error: 950 Upgrade". This message is expected and indicates that the node is in upgrade mode. If any other error code is displayed contact IBM support for advice.

11. Issue the following command to verify that the node is a candidate for addition to the cluster:

    svcinfo lsnodecandidate

    If the node is not listed as a candidate, contact IBM support for advice.

12. Add the node to the cluster, to the same I/O group that it was removed from. For command usage details, see the **svctask addnode** command in the *IBM System Storage SAN Volume Controller: Command-Line Interface User's Guide.* Example usage is:

    svctask addnode -wwnodename <wwnn> -iogrp <iogroup_name or iogroup_id>

    The node will reboot. Wait for the reboot to complete.

13. Issue this command:

    svcinfo lsnode

    Confirm that all nodes are shown as online.

14. On the front panel of the node, press the down button until the "Version:" panel is displayed. Verify that this still shows the new level of software which you just installed on the node.

15. If 2 or more nodes (including the configuration node) have not yet been upgraded, repeat this section from step 1 to upgrade the next node, again selecting a node which is **not** the configuration node.

    Otherwise, continue with the next section.

Upgrading the configuration node

1. Check that all hosts have all paths available to VDisks presented to them by SVC. If not, wait up to 30 minutes and repeat the check. If some paths are still unavailable, investigate and resolve this before continuing the SVC software upgrade.

2. Verify that any mirrored VDisks are synchronized by issuing the command

   svcinfo lsvdisk

   and verifying that every mirrored VDisks has a value of "yes" in the "sync" field.

3. Issue the following command to remove the configuration node from the cluster:

   svctask rmnode <node_name or node_id>

   Note: the ssh connection to the cluster will close, since the configuration node has been removed from the cluster.

4. Establish a new ssh connection to the cluster

5. Verify that the original configuration node is no longer a member of the cluster:

   svcinfo lsnode

4. Issue the following command to verify that the node is a candidate for addition to the cluster:

   svcinfo lsnodecandidate

5. Add the node to the cluster, to the same I/O group that it was removed from. For command usage details, see the **svctask addnode** command in the *IBM System Storage SAN Volume Controller: Command-Line Interface User's Guide.* Example usage is:

   svctask addnode -wwnodename <wwnn> -iogrp <iogroup_name or iogroup_id> -name <node name>

   The node will reboot. Wait for the reboot to complete.

   This will automatically upgrade the software on this last node.

Final checks

1. The cluster should now be running at the new software level. To verify this, issue:

svcinfo lscluster <cluster_name>

Confirm that the value of the code_level field includes the V.R.M.F of the new software level; eg:

code_level 5.1.0.0 (build 9.15.0910230000)

2. Issue this command:

   svcinfo lsnode

   Confirm that all nodes are shown as online.

3. Verify that all VDisks and MDisks are online:

   svcinfo lsvdisk

   svcinfo lsmdisk

4. If any services, advanced functions or scripts were stopped prior to starting the software upgrade, restart them as required.