IBM

Redpaper

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IBM System Storage SAN Volume Controller Upgrade Path from Version 4.3.1 to 6.1

In recent years, IBM® has released the following major versions of IBM System Storage® SAN Volume Controller (SVC) code:

- ► 4.3.1 at the end of 2008
- ► 5.1 at the end of 2009
- ► 6.1 at the end of 2010

It is possible that you have not kept pace with each new version of SVC. In this IBM Redpaper™ publication, we show the basic steps to ensure a successful installation of SVC 6.1 starting from a 4.3.1 level.

Upgrading from version 4.3.1 to 5.1

As with any other SVC upgrade, the SVC code upgrade from 4.3.1 to 5.1 basically involves two steps:

1. Upgrading the SVC console
2. Upgrading the SVC software

Upgrading the SVC console

You can manage the SVC using one of the following methods:

- ► System Storage Productivity Center (SSPC)
- ► A SAN Volume Controller Management Console
- ► A PuTTY-based SAN Volume Controller command-line interface

Figure 1 shows the three ways to manage an SVC cluster.
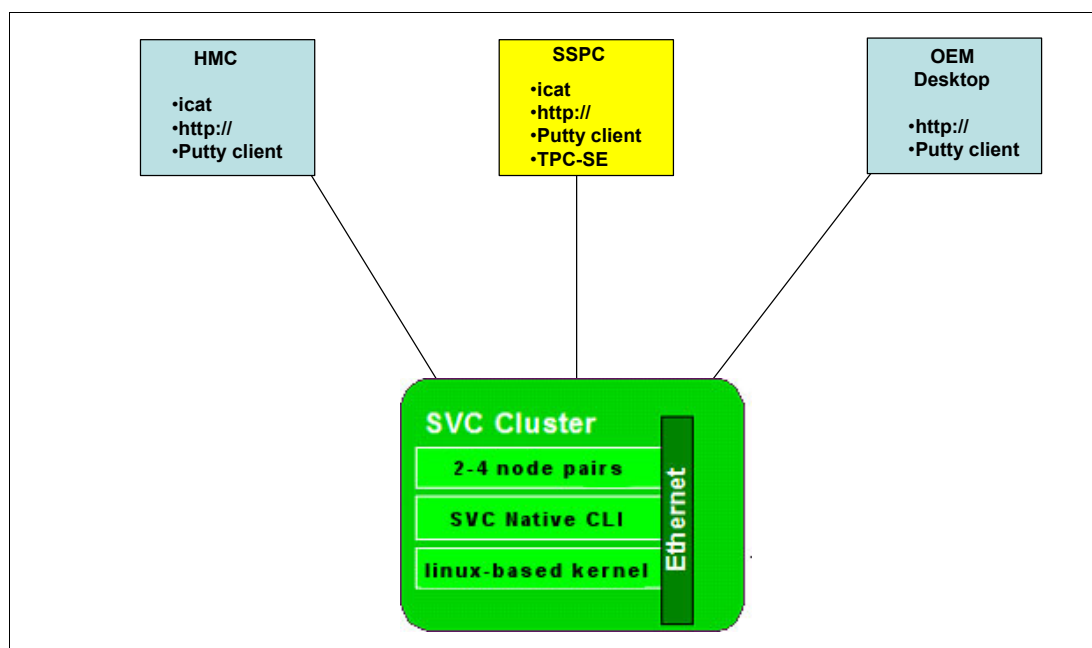

Figure 1   SVC cluster management

Starting with SVC 4.3.1, the SVC Console (ICAT) can use the Common Information Model (CIM) Agent that is embedded in the SVC cluster. With SVC 5.1, using the embedded CIM object manager (CIMOM) is mandatory. When upgrading from SVC Console 4.3.1 to 5.1, the installation program attempts to migrate user accounts that are currently defined to the CIMOM on the cluster. If the migration of these accounts fails with the installation program, you can migrate the user accounts manually with the help of a script. For more information, see *IBM System Storage SAN Volume Controller Software Installation and Configuration Guide*, SC23-6628.

You must complete the following steps to upgrade SVC Console 4.3.1 to SVC Console 5.1:

1. Download the latest available version of the ICA application to check for compatibility with your running version:

   http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S1002888

2. Save your account definitions and document all defined users, passwords, and SSH keys. You might need to reuse these users, passwords, and keys in case you encounter any issues during the GUI upgrade process.

   Example 1 shows how to list the defined accounts using the CLI.

Example 1   Accounts list

```
IBM_2145:ITSO-CLS3:admin>svcinfo lsuser
id              name
password      ssh_key         remote          u
sergrp_id     usergrp_name
0               superuser
yes           no              no              0
SecurityAdmin
1               admin
yes           yes             no              0
SecurityAdmin
```

```
IBM_2145:ITSO-CLS3:admin>svcinfo lsuser 0
id 0
name superuser
password yes
ssh_key no
remote no
usergrp_id 0
usergrp_name SecurityAdmin
IBM_2145:ITSO-CLS3:admin>svcinfo lsuser 1
id 1
name admin
password yes
ssh_key yes
remote no
usergrp_id 0
usergrp_name SecurityAdmin
IBM_2145:ITSO-CLS3:admin>
```

3. Execute the `setup.exe` file from the location where you saved and extracted the latest SVC Console compressed file. Figure 2 shows the location of the `setup.exe` file on our test system.
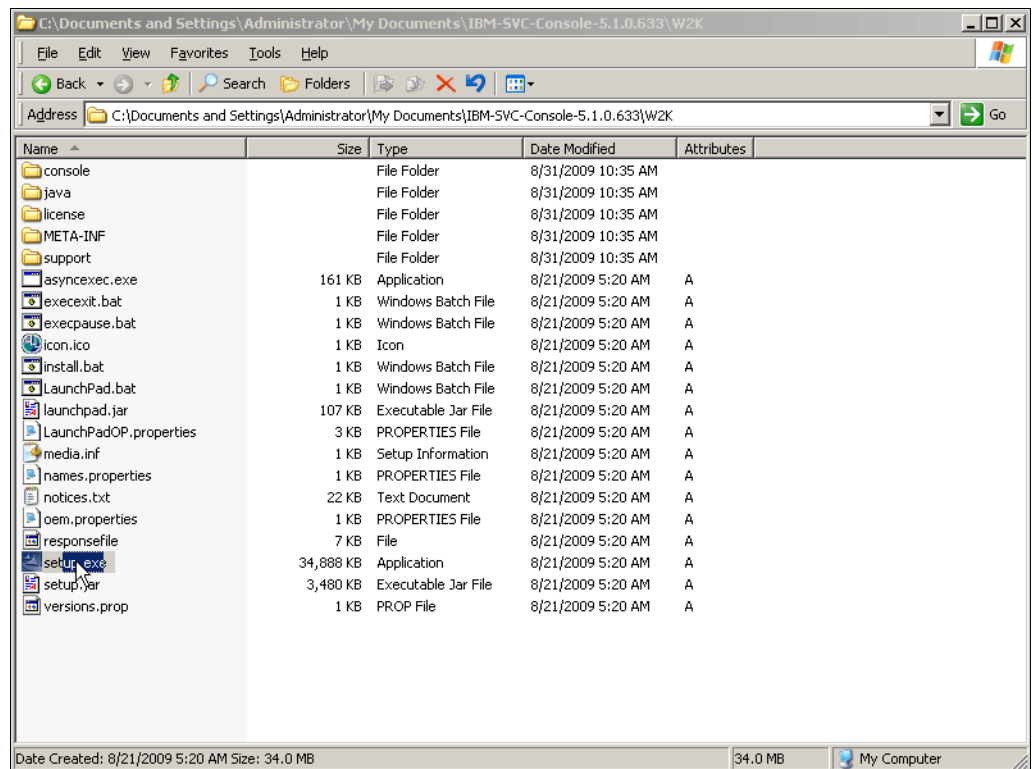

Figure 2   Location of the setup.exe file

4. The installation wizard starts (as shown in Figure 6 on page 6) and prompts you to shut down any running Windows® programs, to stop all SVC services, and to review the readme file. Figure 3 shows how to stop SVC services.
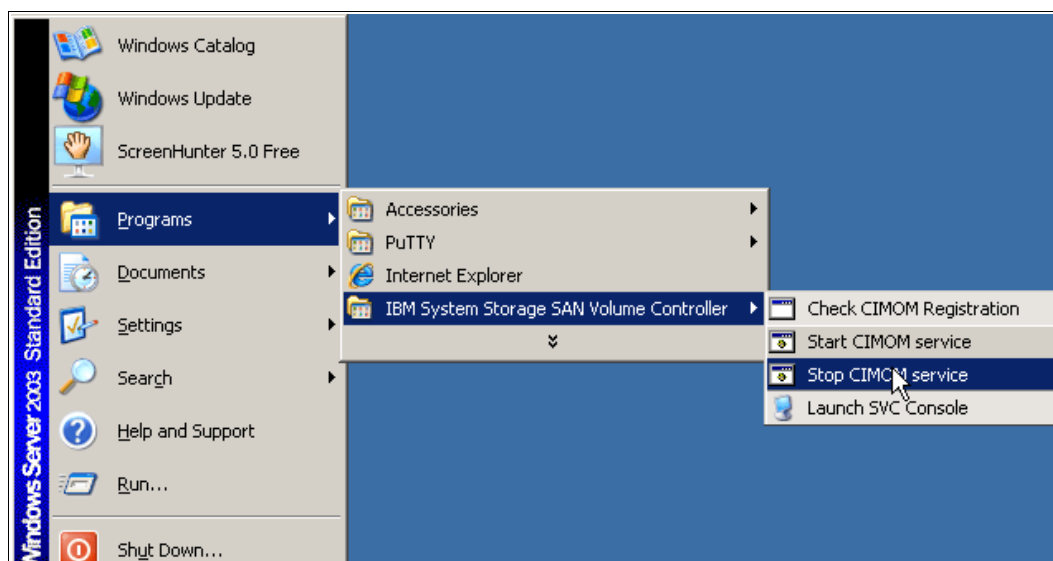

Figure 3   Stop CIMOM service

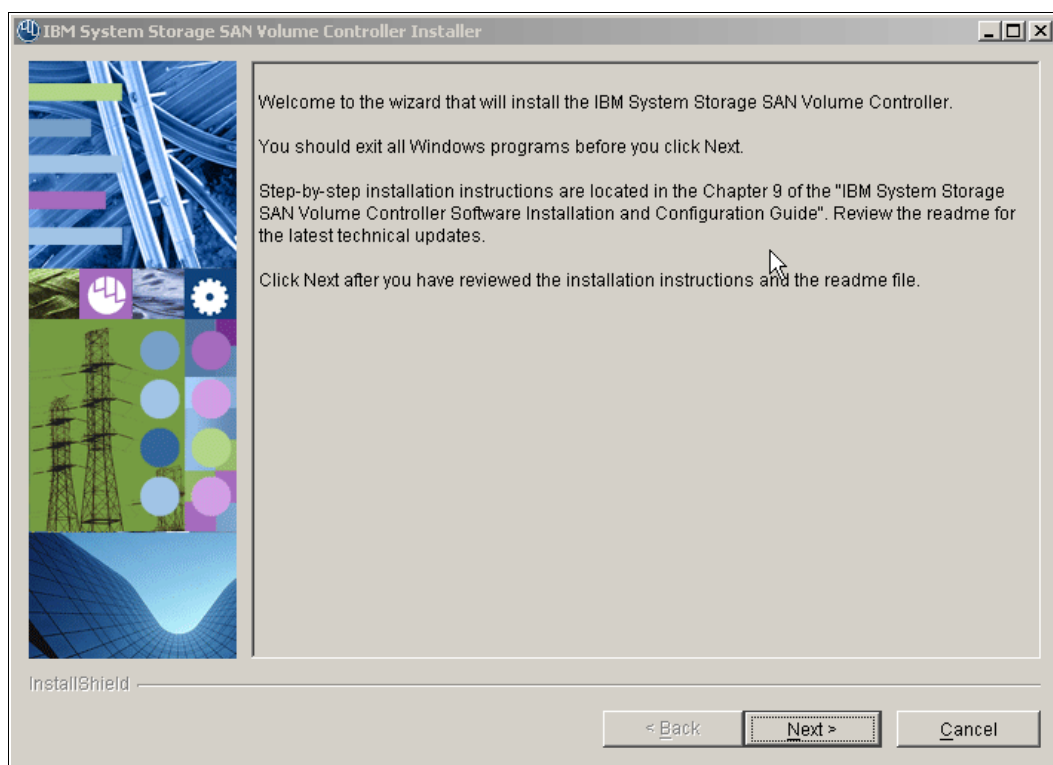The welcome window opens as shown in Figure 4.

Figure 4   Wizard welcome window

After you review the installation instructions and the readme file, click **Next**.

5. The installation wizard prompts you to read and accept the terms of the license agreement, as shown in Figure 5. Click **Next**.
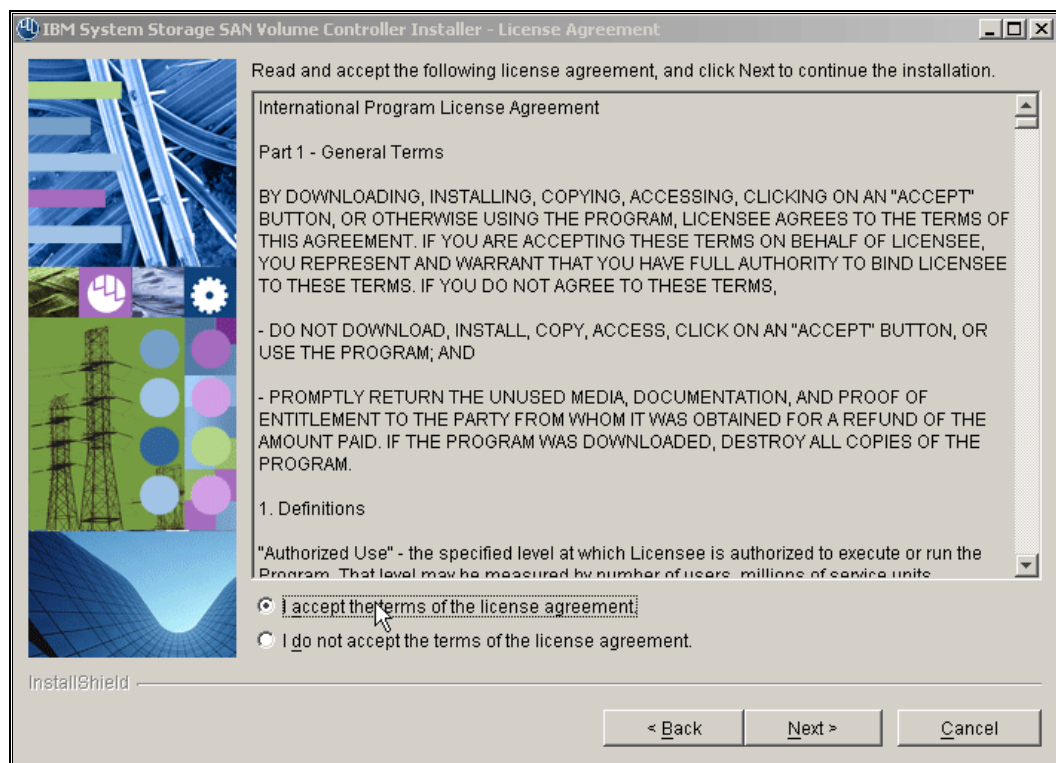

Figure 5   License agreement window

6. The installation detects your existing SVC Console installation (if you are upgrading). If it does detect your existing SVC Console installation, it prompts you to perform the following steps:

   a. Select the Preserve Configuration option if you want to keep your existing configuration.

   > **Important:** If you want to keep your SVC configuration, make sure that you select the Preserve Configuration option. If you omit this selection, you will lose your *entire* SVC Console setup, and you will have to reconfigure your console as though it were a new installation.

   b. Manually shut down the following SVC Console services:
   - IBM System Storage SAN Volume Controller Pegasus Server
   - Service Location Protocol
   - IBM WebSphere® Application Server V6 - SVC

   There might be differences in the existing services, depending on which version you are upgrading from. Follow the instructions for the services to shut down, as shown in Figure 6. Click **Next**.
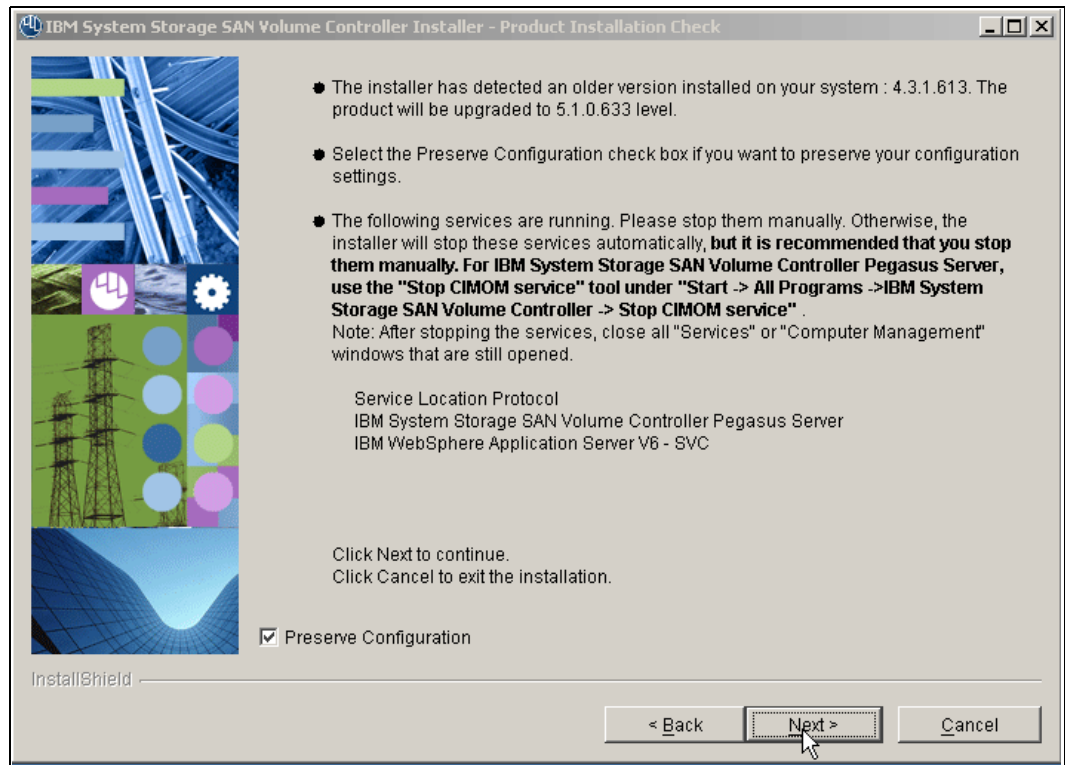
Figure 6   Product Installation Check

7. The installation wizard then checks that the appropriate services are shut down, removes the previous version, and shows the Installation Confirmation window, as shown in Figure 7. If the wizard detects any issues, it first shows you a page that details the possible issues to give you time to fix them before proceeding.
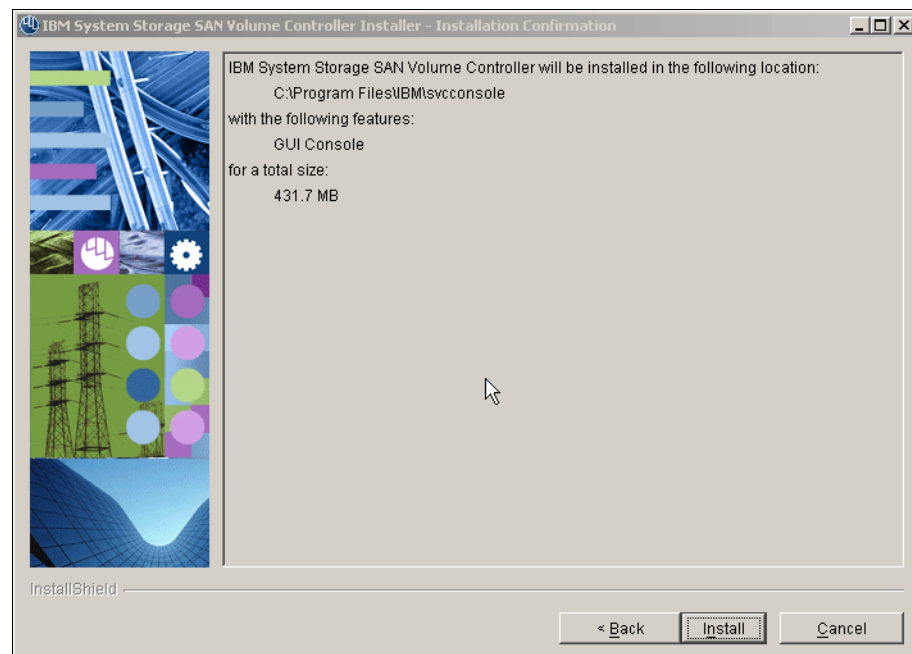

Figure 7   Installation Confirmation

8. Figure 8 shows the progress of the installation. For our environment, it took approximately 10 minutes to complete.
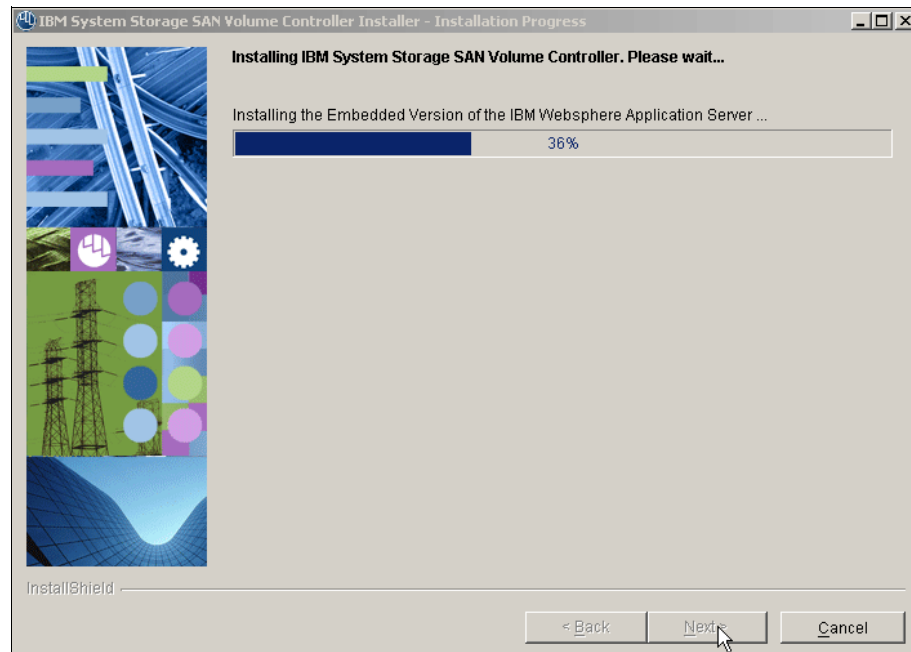

Figure 8   Installation Progress

9. The installation process now starts the migration for the cluster user accounts. Starting with SVC 5.1, the CIMOM is moved into the cluster, and it is no longer present in the SVC Console or System Storage Productivity Center. The CIMOM authentication login process is performed in the ICA application when you launch the SVC management application.

    As part of the migration input, Figure 9 shows where to enter the Admin Password to each of the clusters that you already own.

    This password was generated when you first created the SVC cluster and must be saved carefully.
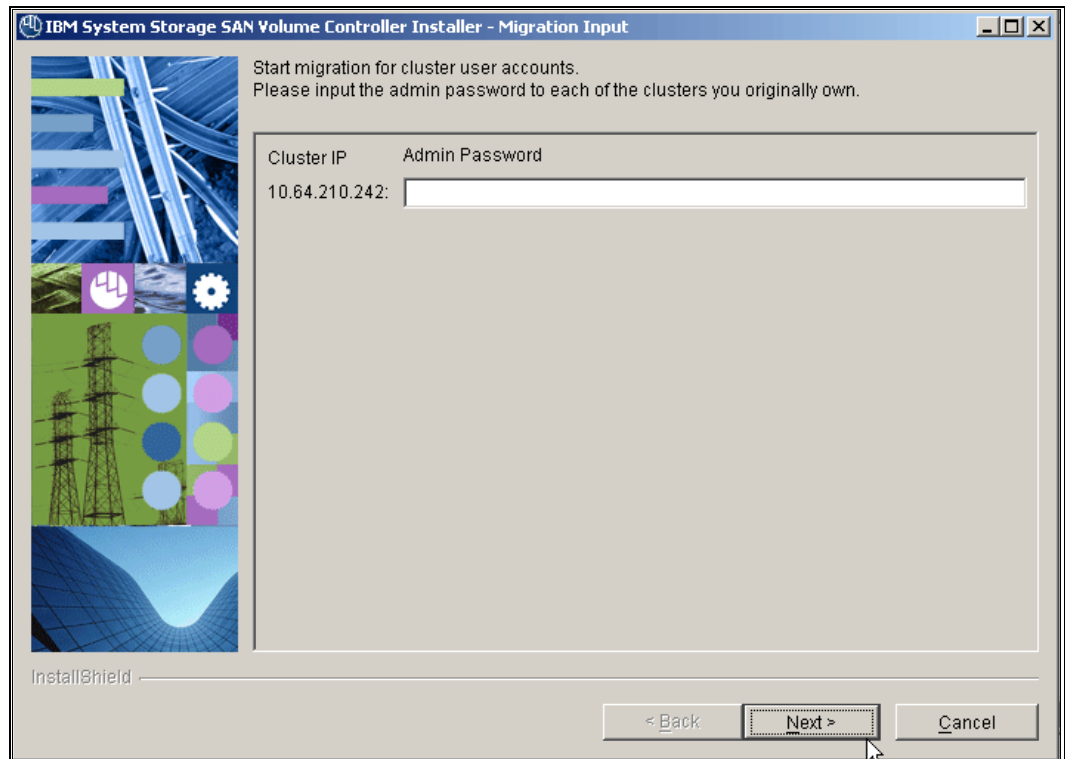
Figure 9   Migration Input

10. Click **Next**. The wizard either restarts all of the appropriate SVC Console processes or informs you that you need to reboot. It then gives a summary of the installation. In our case, we needed to reboot, as shown in Figure 10.
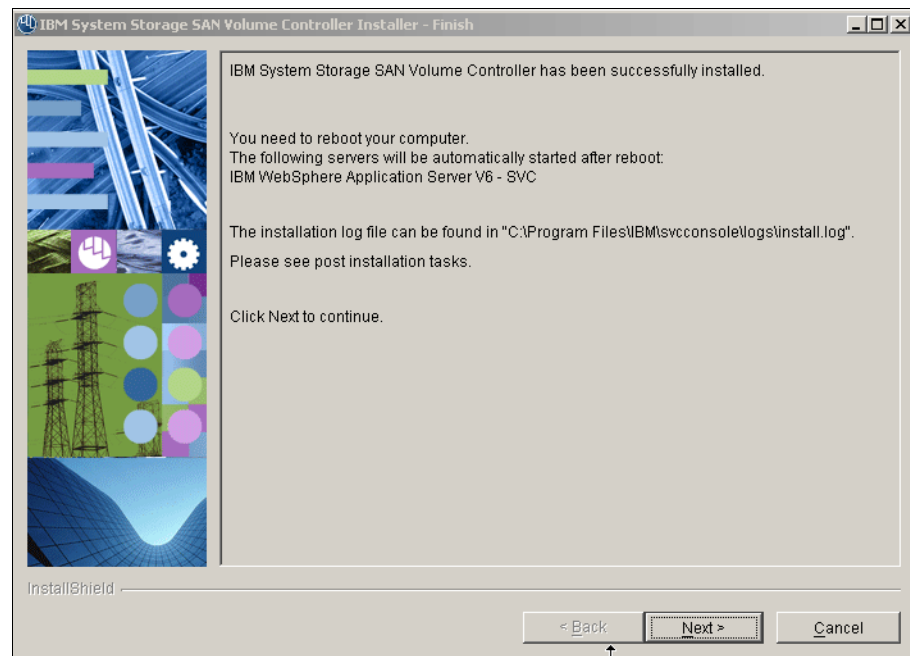

Figure 10   Installation summary

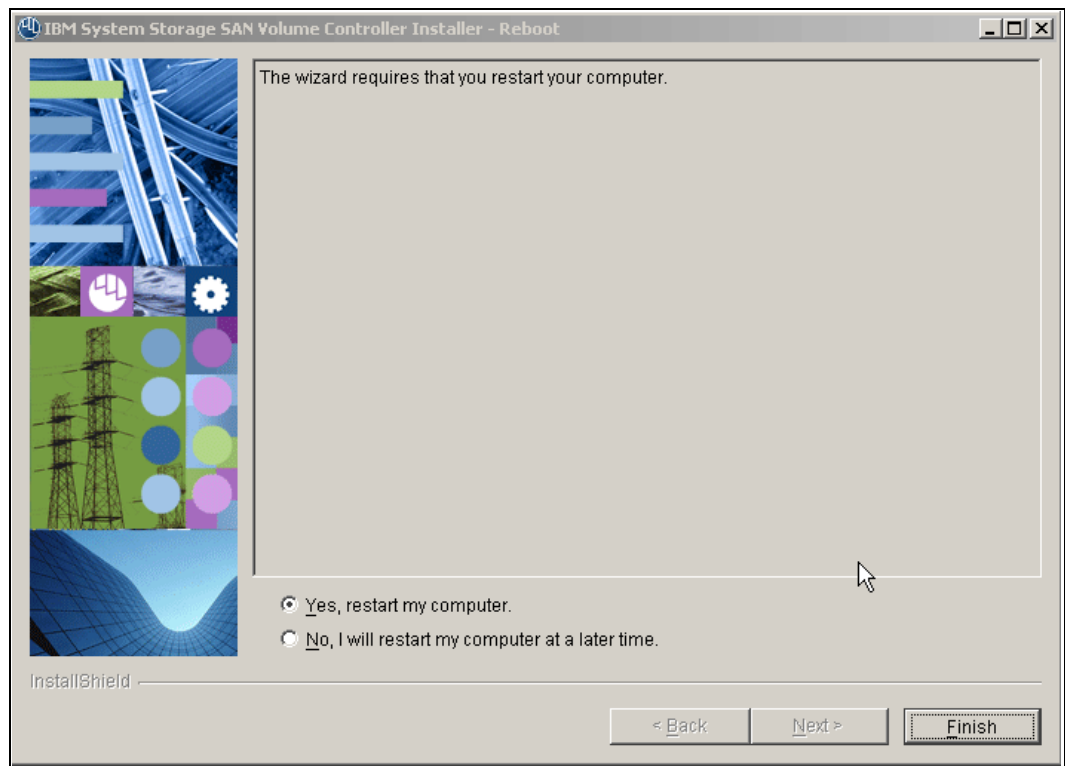11. The wizard requires that we restart the computer (Figure 11).

Figure 11   Installation finished: Requesting reboot

12. To see the new interface, you can launch the SVC Console by using the icon on the desktop or by connecting to the following link:

    `http://<localhost or your console IP add.>:9080/ica`

13. Log in and confirm that the upgrade was successful by noting the Console Version number on the right side of the window under the graphic. See Figure 12.
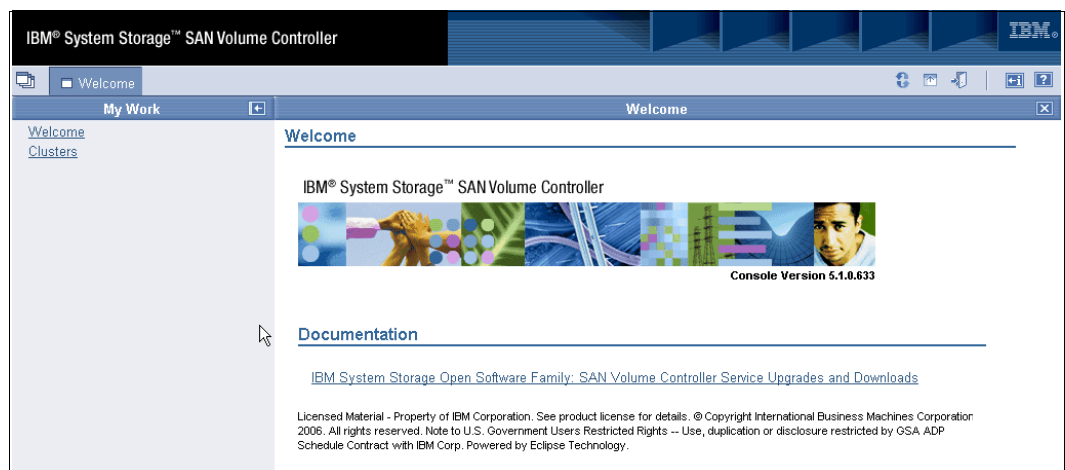

Figure 12   Launching the upgraded SVC Console

To access the SVC, you must click **Clusters** on the left pane. You are redirected to the Viewing Clusters window, as shown in Figure 13.
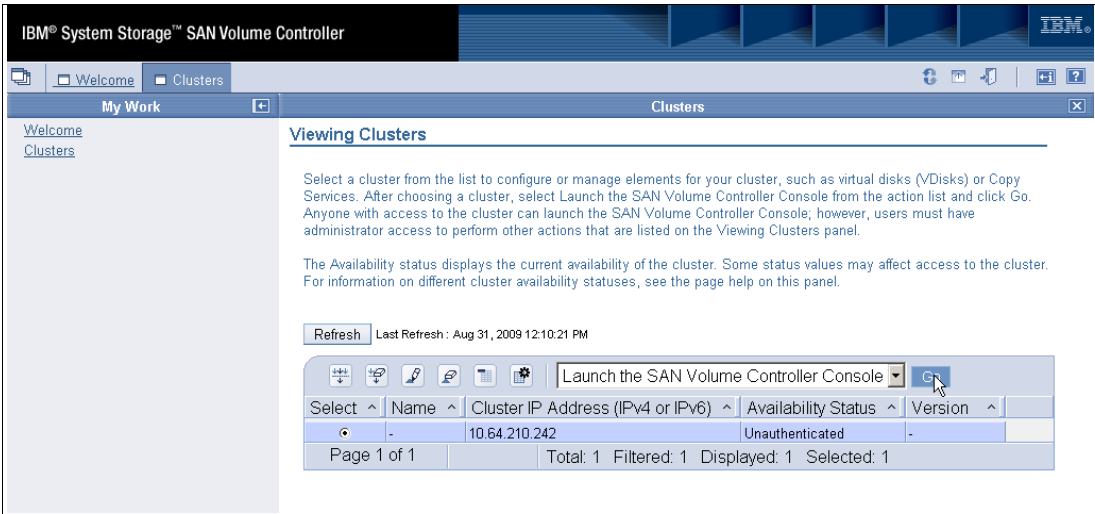

Figure 13   Viewing Clusters

The cluster's availability status is listed as *Unauthenticated*, which is expected. Select the cluster, click **GO**, and launch the SAN Volume Controller Application. You are required to insert your CIMOM user ID (*superuser*) and your password as shown in Figure 14.

Figure 14   Sign on to cluster

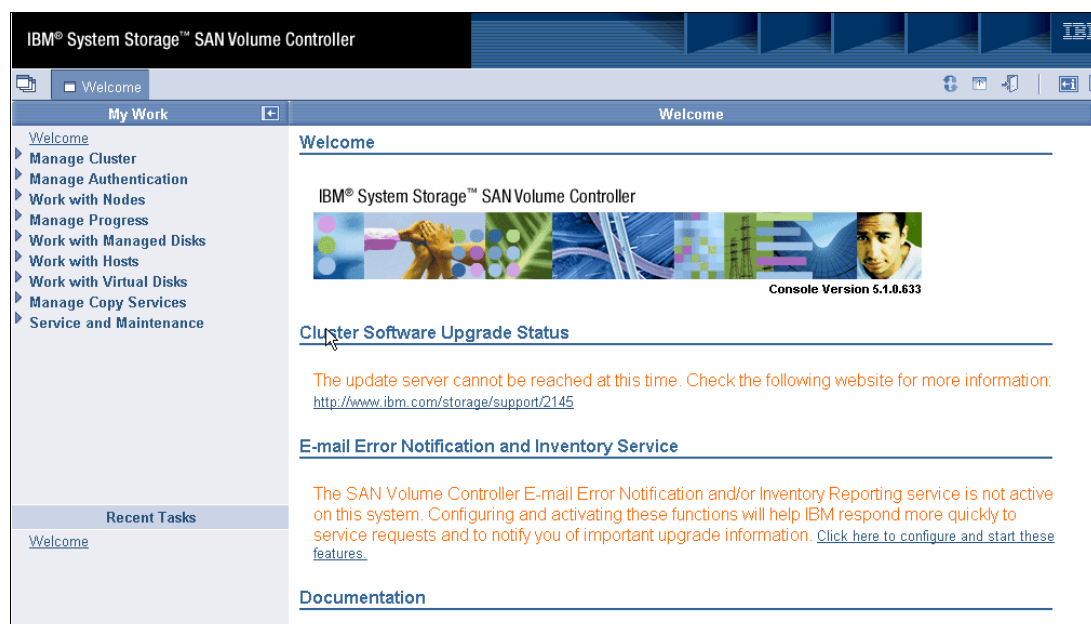Finally, you can manage your SVC cluster, as shown in Figure 15.

Figure 15   Cluster management window

Upgrading the SVC software

In this section, we explain the steps to upgrade the SVC software from version 4.3.1 to version 5.1.

Precautions before upgrade

> **Important:** Before you attempt any SVC code update, read and understand the SVC concurrent compatibility and code cross-reference matrix. Go to the following site and click the link for **Latest SAN Volume Controller code**:
>
> http://www-1.ibm.com/support/docview.wss?uid=ssg1S1001707

During the upgrade, each node in your SVC cluster is shut down and restarted automatically by the upgrade process. Because each node in an I/O Group provides an alternate path to volumes, use Subsystem Device Driver (SDD) to make sure that *all* I/O paths between *all* hosts and SANs are working.

If you have not performed this check, certain hosts might loose connectivity to their volumes and experience I/O errors when the SVC node that is providing that access is shut down during the upgrade process.

You can check the I/O paths by using SDD `datapath query` commands.

It is well worth double-checking that your uninterruptible power supply unit power configuration is also set up correctly (even if your cluster is running without problems). Specifically, double-check the following areas:

► Ensure that your uninterruptible power supply units are all getting power from an *external source* and that they are *not* daisy-chained. Make sure that each uninterruptible power supply unit is not supplying power to another node's uninterruptible power supply unit.

► Ensure that the power cable and the serial cable coming from the back of each node goes back to the *same* uninterruptible power supply unit. If the cables are crossed and are going back to separate uninterruptible power supply units, during the upgrade, as one node is shut down, another node might also be mistakenly shut down.

Using the SVC upgrade test utility

A function of the Master Console is to check the software levels in the system against recommended levels that are documented on the support website. You are informed if software levels are up-to-date or if you need to download and install newer levels. This information is provided after you log in to the SVC GUI.

In the middle of the Welcome window, you will see that new software is available. Use the link that is provided there to download the new software and to get more information about it.

Important: To use this feature, the System Storage Productivity Center/Master Console must be able to access the Internet.

If the System Storage Productivity Center cannot access the Internet because of restrictions, such as a local firewall, the following message displays:

```
The update server cannot be reached at this time.
```

Use the web link that is provided in the message for the latest software information.

Installing the SVC upgrade test utility

The SVC software upgrade test utility is an SVC software utility that checks for known issues that can cause issues during an SVC software upgrade. It is available from:

http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S4000585

You can use the `svcupgradetest` utility to check for known issues that might cause problems during an SVC software upgrade. You can use it to check for potential problems upgrading from V4.1.0.0 and all later releases to the latest available level.

You can run the utility multiple times on the same cluster to perform a readiness check in preparation for a software upgrade. We strongly recommend running this utility for a final time immediately prior to applying the SVC upgrade, making sure that there have not been any new releases of the utility since it was originally downloaded.

After you install the utility, you can obtain the version information for this utility by running the **svcupgradetest -h** command.

The installation and usage of this utility are nondisruptive and do not require restarting any SVC nodes, so there is no interruption to host I/O. The utility is installed only on the current configuration node.

System administrators must continue to check whether the version of code that they plan to install is the latest version. You can obtain information about the latest information at:

http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S1001707#_Latest_SAN_Volume_Controller%20Code

This utility is intended to *supplement* rather than *duplicate* the existing tests that are carried out by the SVC upgrade procedure (for example, checking for unfixed errors in the error log).

The upgrade test utility includes command-line parameters.

Prerequisites

You can install this utility only on clusters running SVC V4.1.0.0 or later.

Installation instructions

To use the upgrade test utility, follow these steps:

1. Download the latest version of the upgrade test utility (IBM2145_INSTALL_svcupgradetest_V.R) using the download link:

   http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S4000585

2. You can install the utility package using the standard SVC Console (GUI) or the command-line interface (CLI) software upgrade procedures that are used to install any new software onto the cluster.

   For example, to install the package after it is uploaded to the cluster using the CLI, use the following command:

   ```
   svcservicetask applysoftware -file IBM2145_INSTALL_svcupgradetest_n.nn
   ```

3. Run the upgrade test utility by logging on to the SVC CLI and running the following command:

   ```
   svcupgradetest -v <V.R.M.F>
   ```

   where *V.R.M.F* is the version number of the SVC release that is being installed.

   For example, if you are upgrading to SVC V5.1.0.0, use the following command:

   ```
   svcupgradetest -v 5.1.0.0
   ```

   The output from the command either states that there are no issues problems found or directs you to details about any known issues that have been discovered on this cluster.

Example 2 shows the command to test an upgrade.

Example 2   Run an upgrade test

```
IBM_2145:ITSO-CLS2:admin>svcupgradetest
svcupgradetest version 4.11. Please wait while the tool tests
for issues that may prevent a software upgrade from completing
successfully. The test will take approximately one minute to complete.

The test has not found any problems with the 2145 cluster.
Please proceed with the software upgrade.
```

Upgrade procedure

To upgrade the SVC cluster software, perform the following steps:

1. Use the Run Maintenance Procedure in the GUI, and correct all open issues.

2. Back up the SVC Config, as described in *IBM System Storage SAN Volume Controller Software Installation and Configuration Guide Version 4.3.1*, SC23-6628, which is available at:

   http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S7002605

3. Back up the support data in case there is an issue during the upgrade that renders a node unusable. This information can assist IBM Support in determining why the upgrade might have failed and help with a resolution. Example 3 shows the necessary commands that you need to run. This command is available only in the CLI.

Example 3 Creating an SVC snapshot

```
IBM_2145:ITSO-CLS2:admin>svc_snap -dumpall
Collecting system information...
Copying files, please wait...
Copying files, please wait...
Dumping error log...
Creating snap package...
Snap data collected in /dumps/snap.100047.100617.002334.tgz
```

4. Select **Software Maintenance** → **List Dumps** → **Software Dumps**, download the dump file that was created, and store the file in a safe place with the SVC Config that you created previously.

5. From the SVC Welcome window, click **Service and Maintenance**, and then click **Upgrade Software**.

6. In the Software Upgrade window, shown in Figure 16, you can either upload a new software upgrade file or list the upgrade files. Click **Upload** to upload the latest SVC cluster code.
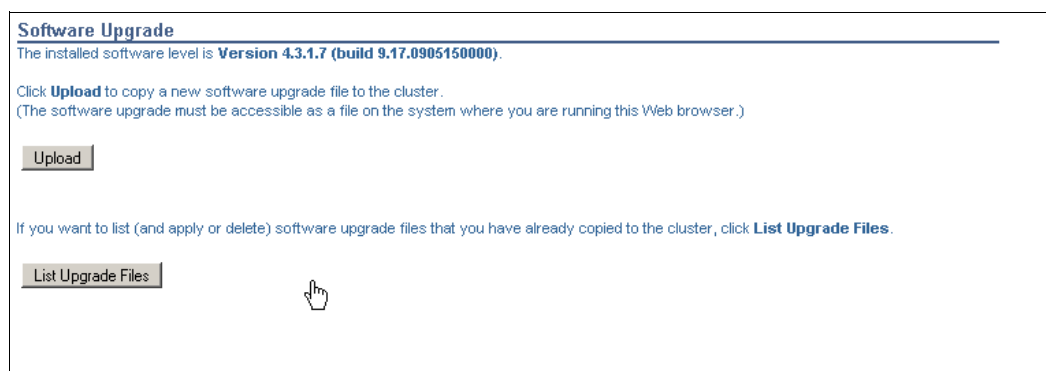

Figure 16 Software Upgrade window

7. In the File Upload window, shown in Figure 17, type or browse to the directory on your management workstation (for example, Master Console) where you stored the latest code level, and click **Upload**.

> **File names note:** The file names used in the following figures are just examples. Use the correct file name that you want to upload or apply.
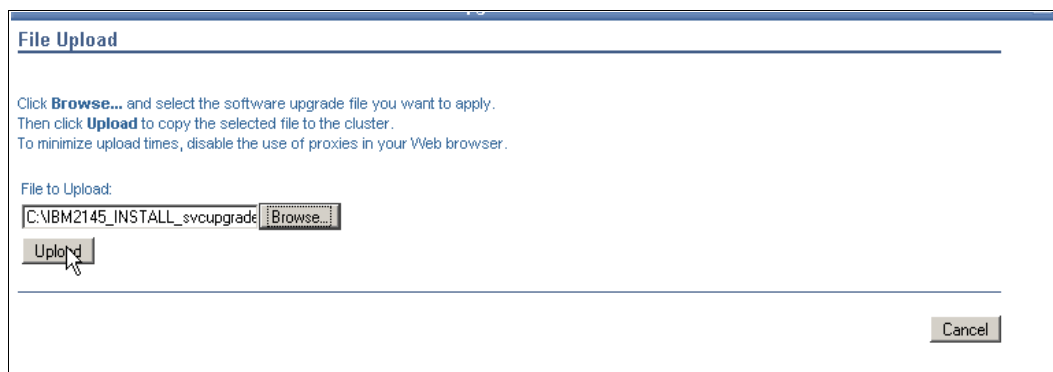

Figure 17   File Upload window

8. The File Upload window (Figure 18) is displayed if the file is uploaded. Click **Continue**.
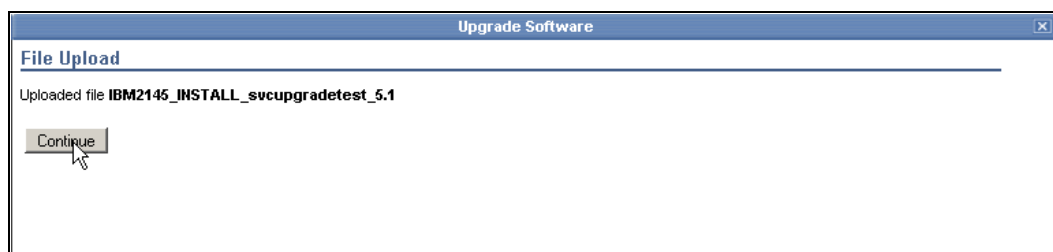

Figure 18   File Upload window

9. The Select Upgrade File window, shown in Figure 19, lists the available software packages. Make sure that the package that you want to apply is selected. Click **Apply**.
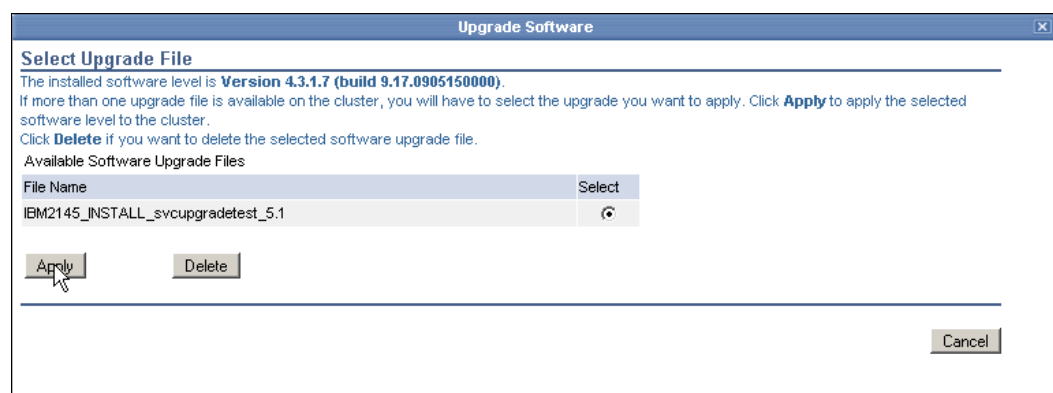

Figure 19   Select Upgrade File window

10. In the Confirm Upgrade File window, shown in Figure 20, click **Confirm**.
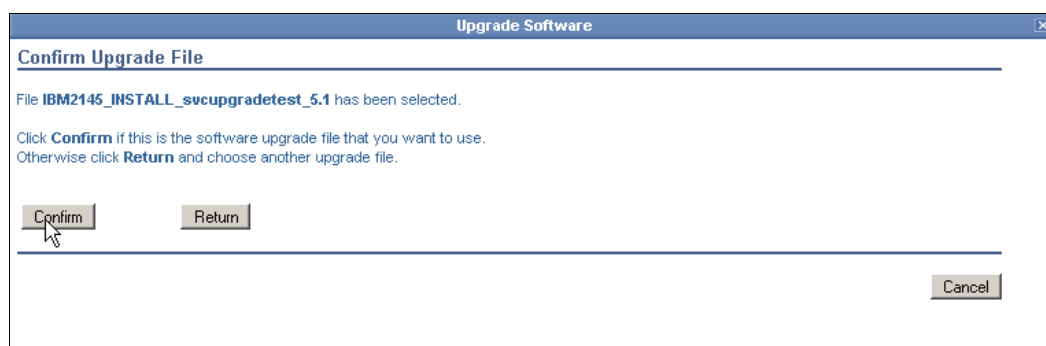

Figure 20   Confirm Upgrade File window

11. After this confirmation, the SVC checks whether there are any outstanding errors. If there are no errors, click **Continue**, as shown in Figure 21, to proceed to the next upgrade step. Otherwise, the **Run Maintenance** button displays, which is used to check the errors.

Figure 21   Check Outstanding Errors window

12. The Check Node Status window shows the in-use nodes with their current status displayed, as shown in Figure 22. Click **Continue** to proceed.
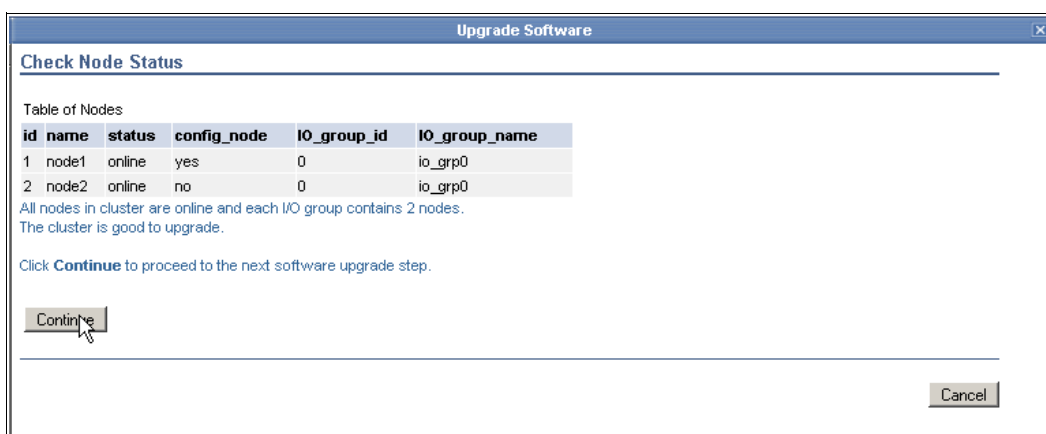

Figure 22   Check Node Status window

13. The Start Upgrade window opens. Click **Start Software Upgrade** to start the software upgrade, as shown in Figure 23.
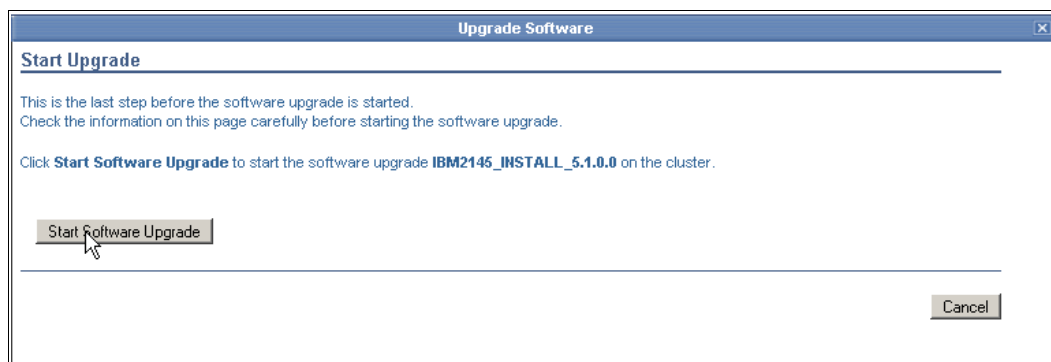

Figure 23   Start Upgrade window

The upgrade starts by upgrading one node in each I/O Group.

14. The Software Upgrade Status window opens, as shown in Figure 24. Click **Check Upgrade Status** periodically. This process might take a while to complete. If the software is completely upgraded, you get a software completed message, and the code level of the cluster and nodes shows the newly applied software level.
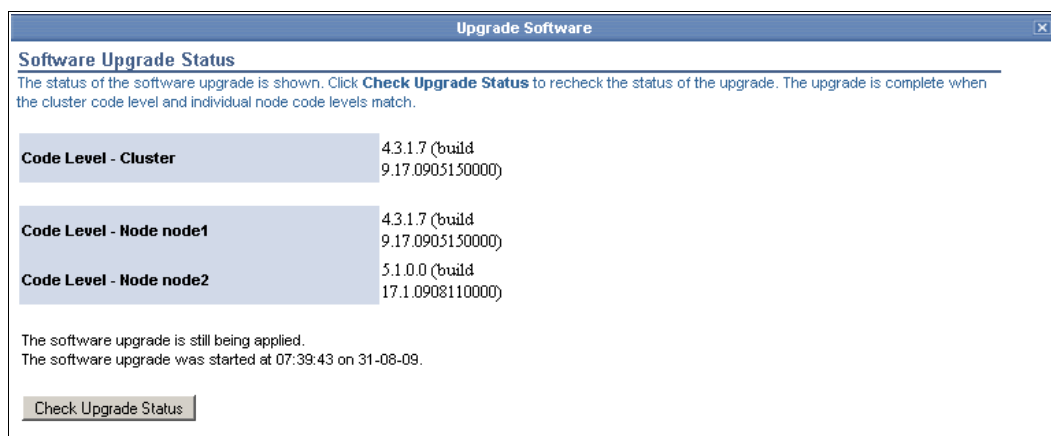

Figure 24   Software Upgrade Status window

During the upgrade process, you can issue only informational commands. All task commands, such as the creation of a volume, are denied, including both GUI and CLI tasks. All tasks, such as creation, modifying, mapping, and deleting, are denied.

15. The new code is distributed and applied to each node in the SVC cluster. After installation, each node is restarted automatically in turn.

Although unlikely, if the concurrent code load (CCL) fails, for example if one node fails to accept the new code level, the update on that *one* node is backed out, and the node is reverted to the original code level.

From 4.1.0 onward, the update simply waits for user intervention. For example, if there are two nodes (A and B) in an I/O Group, and node A is upgraded successfully, and then node B experiences a hardware failure, the upgrade ends with an I/O group that has a single node at the higher code level. If the hardware failure is repaired on node B, the CCL then completes the code upgrade process.

> **Tip:** Be patient. After the software update is applied, the first SVC node in a cluster updates and installs the new SVC code version shortly afterward. If multiple I/O groups (up to four I/O groups are possible) exist in an SVC cluster, the second node of the second I/O Group loads the new SVC code and restarts with a 10 minute delay to the first node. A 30 minute delay between the update of the first node and the second node in an I/O group ensures that all paths, from a multipathing point of view, are available again.
>
> An SVC cluster update with one I/O group takes approximately one hour.

16. If you run into an error, go to the Analyze Error Log window. Search for *Software Install completed*. Select **Sort by date with the newest first**, and then click **Perform** to list the software near the top. It might also be worthwhile to capture information for IBM Support to help you diagnose the issue.

Upgrading from version 5.1 to 6.1

With SAN Volume Controller 6.1, IBM introduced a newly designed graphical user interface (GUI) that delivers functional enhancements and greater ease of use. Enhancements to the user interface include greater flexibility of views, increased number of characters allowed for naming objects, display of the command lines being executed, and improved user customization.

The GUI interface and its associated web server now run in the SVC cluster rather than on the SSPC console; therefore, you can access it directly from any web browser.

This enhancement changes the process to upgrade the SVC from version 5.1 to 6.1. You do not need to upgrade the SVC console because the ICA application has been moved into the cluster. Thus, you need to upgrade only the SVC software.

This section explains the steps to upgrade the SVC software from version 5.1 to version 6.1.

> **Software upgrade package naming:** The format for the software upgrade package name ends in four positive integers separated by dots. For example, a software upgrade package might have the following name:
>
> `IBM_2145_INSTALL_6.1.0.0`

Precautions before upgrade

> **Important:** Before you attempt any SVC code update, read and understand the SVC concurrent compatibility and code cross-reference matrix. Go to the following site and click the link for **Latest SAN Volume Controller code**:
>
> http://www-1.ibm.com/support/docview.wss?uid=ssg1S1001707

During the upgrade, each node in your SVC cluster is shut down and restarted automatically by the upgrade process. Because each node in an I/O Group provides an alternate path to volumes, use the Subsystem Device Driver (SDD) to make sure that *all* I/O paths between *all* hosts and SANs are working.

If you have not performed this check, certain hosts might lose connectivity to their volumes and experience I/O errors when the SVC node that is providing that access is shut down during the upgrade process.

You can check the I/O paths by using SDD `datapath query` commands.

It is worth double-checking that your uninterruptible power supply unit power configuration is also set up correctly (even if your cluster is running without issues). Specifically, check the following areas:

► Ensure that your uninterruptible power supply units are all getting their power from an *external source* and that they are *not* daisy-chained. Make sure that each uninterruptible power supply unit is not supplying power to another node's uninterruptible power supply unit.

► Ensure that the power cable and the serial cable running from the back of each node goes back to the *same* uninterruptible power supply unit. If the cables are crossed and are going back to separate uninterruptible power supply units, then during the upgrade, as one node is shut down, another node might also be mistakenly shut down.

Using the SVC upgrade test utility

A function of the Master Console is to check the software levels in the system against recommended levels that are documented on the support website. You are informed if software levels are up-to-date or if you need to download and install newer levels. This information is provided after you log in to the SVC GUI.

In the middle of the Welcome window, you will see if new software is available. Use the link that is provided there to download the new software and to get more information about it.

> **Important:** To use this feature, the System Storage Productivity Center/Master Console must be able to access the Internet. If the System Storage Productivity Center cannot access the Internet because of restrictions, such as a local firewall, the following message displays:
>
> `The update server cannot be reached at this time.`
>
> Use the link that is provided in the message for the latest software information.

Installing the SVC upgrade test utility

The SVC software upgrade test utility is an SVC software utility that checks for known issues that can cause problems during an SVC software upgrade. You can run it on any SVC cluster running level 4.1.0.0 or higher. It is available from:

http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S4000585

You can use the `svcupgradetest` utility to check for known issues that might cause issues during an SVC software upgrade. You can use it to check for potential issues upgrading from V4.1.0.0 and all later releases to the latest available level.

You can run the utility multiple times on the same cluster to perform a readiness check in preparation for a software upgrade. We strongly recommend running this utility for a final time immediately prior to applying the SVC upgrade, making sure that there have not been any new releases of the utility since it was originally downloaded.

After you install the utility, you can obtain the version information for this utility by running the `svcupgradetest -h` command.

The installation and usage of this utility are nondisruptive and do not require restarting any SVC nodes, so there is no interruption to host I/O. The utility is installed only on the current configuration node.

System administrators must continue to check whether the version of code that they plan to install is the latest version. You can obtain information about the latest information at:

http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S1001707#_Latest_SAN_Volume_Controller%20Code

This utility is intended to *supplement* rather than *duplicate* the existing tests that are carried out by the SVC upgrade procedure (for example, checking for unfixed errors in the error log).

The upgrade test utility includes command-line parameters.

Prerequisites
You can install this utility only on clusters running SVC V4.1.0.0 or later.

Installation instructions
To use the upgrade test utility, follow these steps:

1. Download the latest version of the upgrade test utility (`IBM2145_INSTALL_svcupgradetest_V.R`) using the download link:

   http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S4000585

2. You can install the utility package using the standard SVC Console (GUI) or using the command-line interface (CLI) software upgrade procedures that are used to install any new software onto the cluster.

   For example, to install the package after it is uploaded to the cluster using the CLI, use the following command:

   `svcservicetask applysoftware -file IBM2145_INSTALL_svcupgradetest_n.nn`

3. Run the upgrade test utility by logging onto the SVC CLI and running the following command:

   `svcupgradetest -v <V.R.M.F>`

   where *V.R.M.F* is the version number of the SVC release that is being installed.

   For example, if upgrading to SVC V6.1.0.0, the command is `svcupgradetest -v 6.1.0.0`.

   The output from the command either states that there are no issues found or directs you to details about any known issues that have been discovered on this cluster.

Example 4 shows the command to test an upgrade.

Example 4   Run an upgrade test

```
IBM_2145:ITSO-CLS2:admin>svcupgradetest
svcupgradetest version 4.11. Please wait while the tool tests
for issues that may prevent a software upgrade from completing
successfully. The test will take approximately one minute to complete.

The test has not found any problems with the 2145 cluster.
Please proceed with the software upgrade.
```

Upgrade procedure

To upgrade the SVC cluster software, perform the following steps:

1. Use the Run Maintenance Procedure in the GUI, and correct all open issues.

2. Back up the SVC Configuration as described in *IBM System Storage SAN Volume Controller Software Installation and Configuration Guide Version 5.1* SC23-6628, which is available at:

   http://www-01.ibm.com/support/docview.wss?rs=591&uid=ssg1S7002874

3. Back up the support data in case there is a problem during the upgrade that renders a node unusable. This information can assist IBM Support in determining why the upgrade might have failed and can help with a resolution.

   Example 5 shows the necessary commands that you need to run. This command is available only in the CLI.

   Example 5   Creating an SVC snapshot

   ```
   IBM_2145:ITSO-CLS2:admin>svc_snap -dumpall
   Collecting system information...
   Copying files, please wait...
   Copying files, please wait...
   Dumping error log...
   Creating snap package...
   Snap data collected in /dumps/snap.100047.100617.002334.tgz
   ```

4. Select **Software Maintenance** → **List Dumps** → **Software Dumps**, download the dump file that was created, and store it in a safe place with the SVC Config that you created previously.

5. From the SVC Welcome window, click **Service and Maintenance**, and then click **Upgrade Software**.

6. In the Software Upgrade window, shown in Figure 25, you can either upload a new software upgrade file or list the upgrade files. Click **Upload** to upload the latest SVC cluster code.
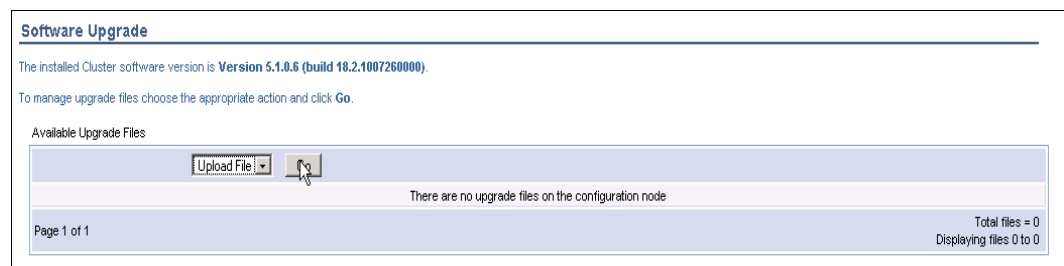

Figure 25   Upload SVC software window

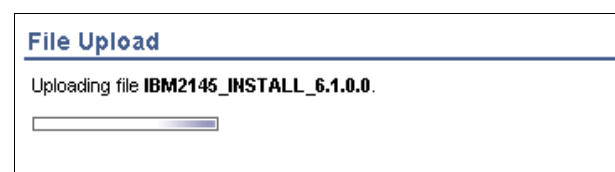Figure 26 shows the File Upload window.

Figure 26   File Upload window

Figure 27 shows the `svcupgradetest` file and the SVC software file uploaded.

Figure 27   Files uploaded window

7. Now you can proceed to apply the `svcupgradetest` software. You are redirected to the confirmation window, shown in Figure 28, and can begin the upgrade in the Start Upgrade window as shown in Figure 29.

Figure 28   Confirm upgrade window

Figure 29   Start upgrade window

8. Execute the `svcupgradetest` command from the SVC CLI, as shown in Example 4 on page 20.

9. Continue with the upgrade as shown in Figure 30, Figure 31, and Figure 32.

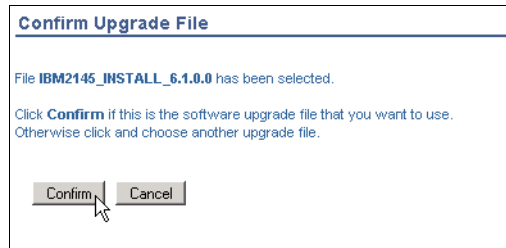

Figure 30   Apply software window

Figure 31   Confirmation window
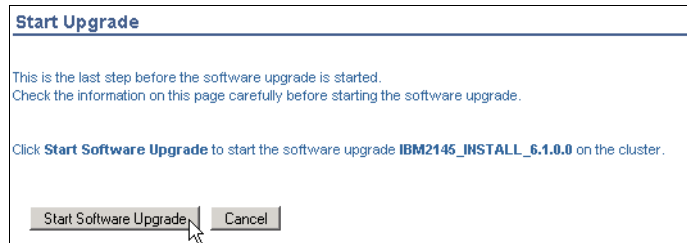
Figure 32   Start software upgrade window

10.Now, you can check the software upgrade status as shown in Figure 33.
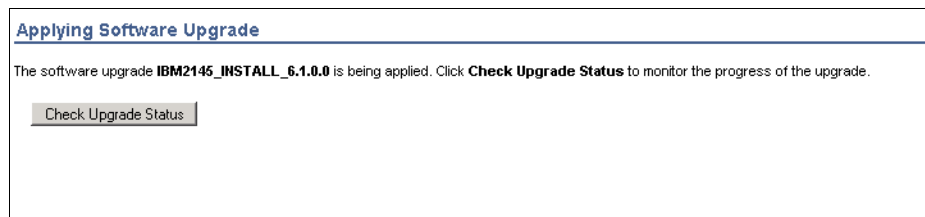
Figure 33   Upgrade status window

Some time later, the first SVC node reboots, and you will see that one node has upgraded to the new SVC software version as shown in Figure 34.

Figure 34   First node upgraded

About 30 minutes later, the software upgrade starts for the remaining node, and at the end of its last reboot you are disconnected from the GUI and from the CLI.

Now, you can use the GUI shown in Figure 35 and Figure 36 to manage your SVC cluster.

Figure 35   GUI login window for version 6.1

Figure 36   GUI management window

For more information about how to manage the SVC using the GUI, refer to *Implementing the IBM System Storage SAN Volume Controller V6.1*, SG24-7933.
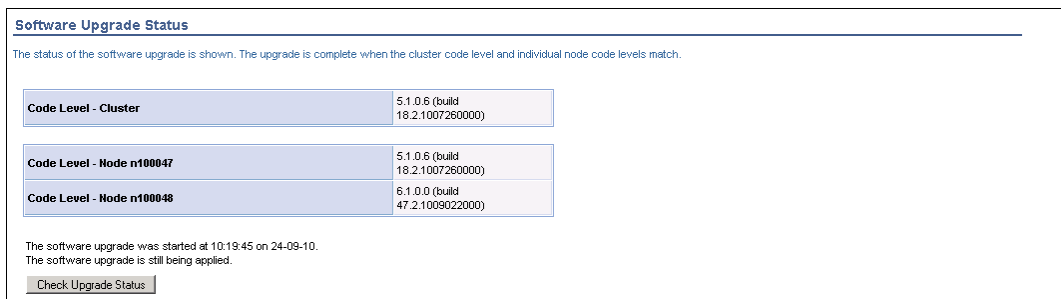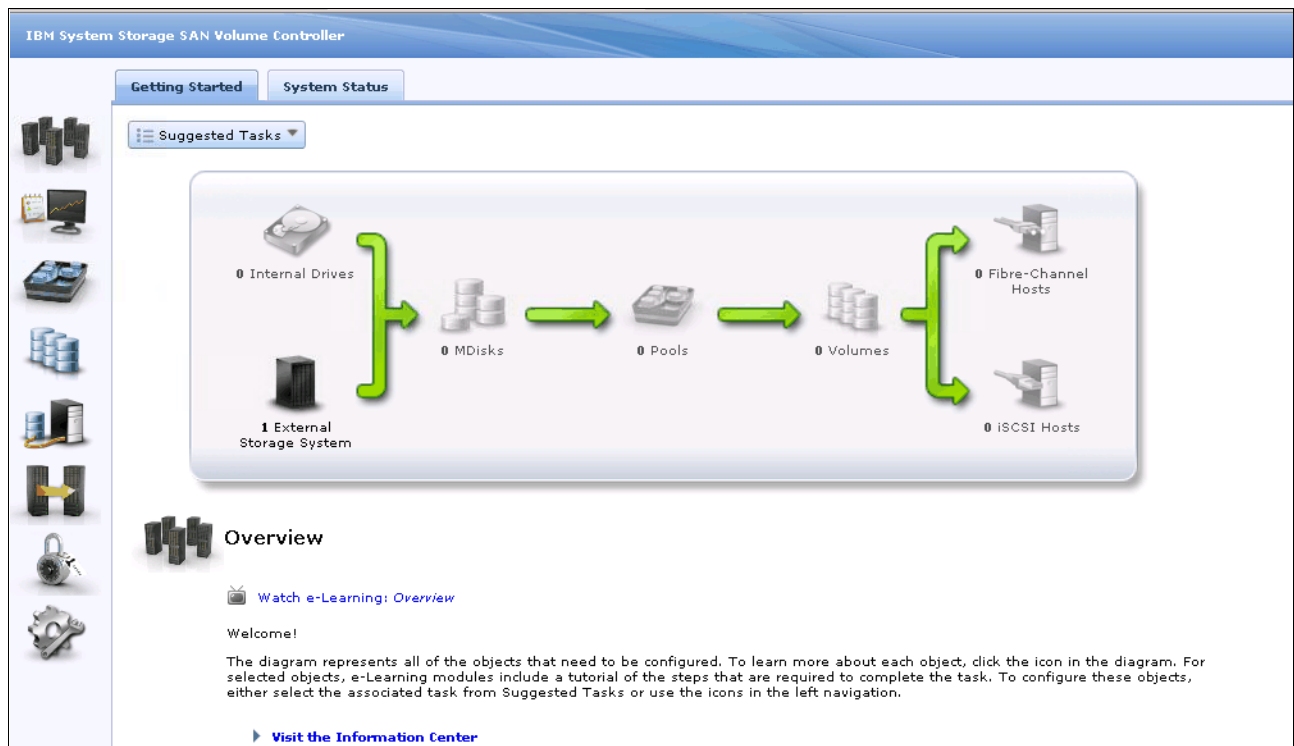
Removing previous SVC Console software

Because the GUI interface and its associated web server now run in the SVC cluster rather than on the SSPC console and because it can be accessed directly from any web browser, you can remove the existing ICA application after you are running on version 6.1 from your SSPC or management console.

Keep in mind, that if in your data center you have other SVC clusters running with an SVC version other then 6.1, you still need the 5.1 or previous ICA application to be able to manage them.

If you want to uninstall your previous console software from your SSPC or management console, you uninstall it as you would other software programs on a Windows based server. Follow these steps:

1. From your SSPC or Windows management console Control Panel, select the Programs and Features icon, as shown in Figure 37.
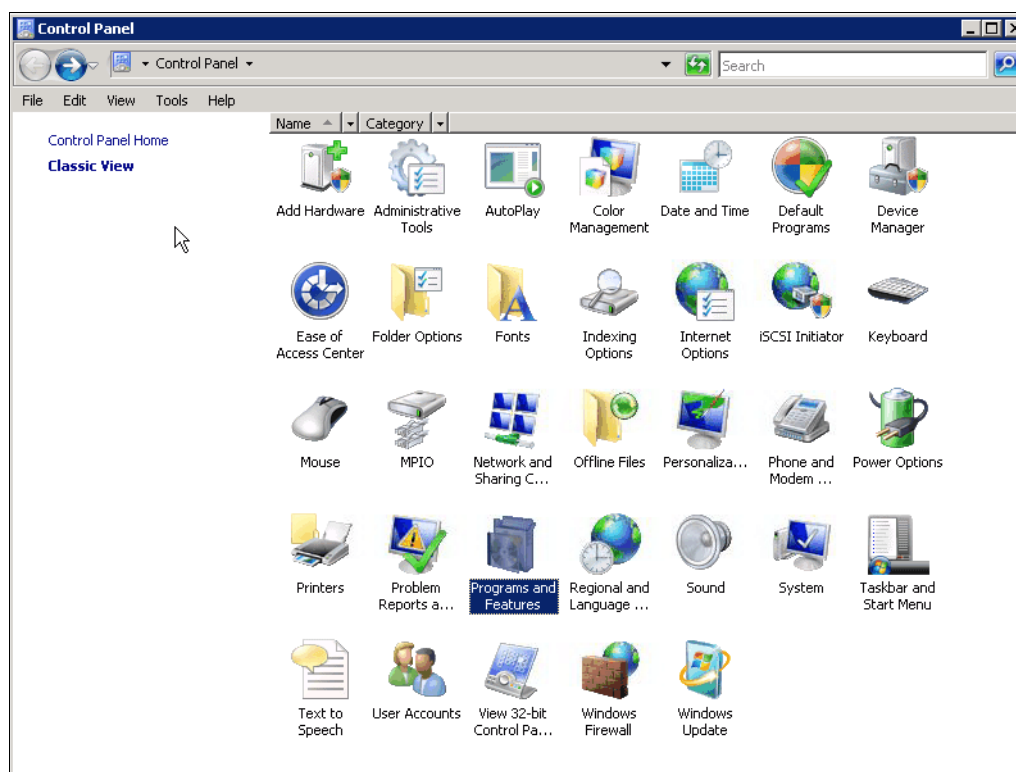

Figure 37   Windows 2008 control panel

2. Search for the entry that is related to your SVC console application, as shown in Figure 38.
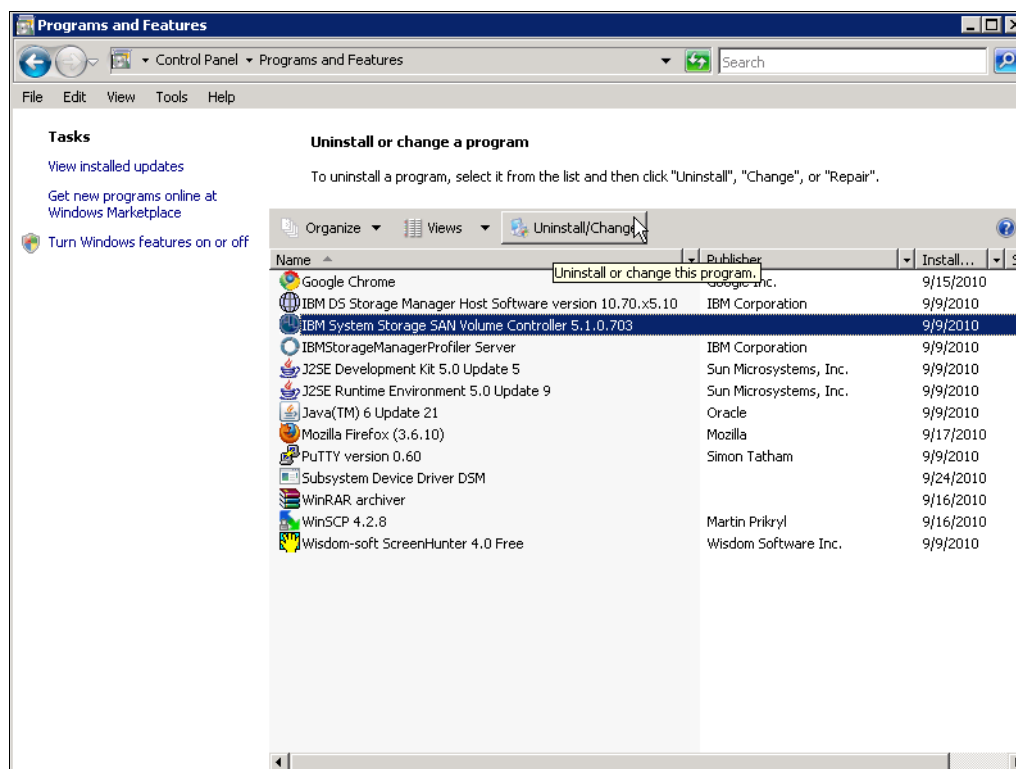

Figure 38   Windows 2008 Uninstall or change screen

3. Highlight the entry, and click **Uninstall/Change**. Follow the on-screen instructions

4. Reboot the SSPC or management console as required.

The team who wrote this paper

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This document REDP-4716-00 was created or updated on December 13, 2010.

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