
Updating Dell Servers by Integrating SUU/DUP with Cluster-Aware Updating On Microsoft Windows Server 2012

This white paper is a guide for integrating Dell firmware and driver updates using the Dell Server Update Utility (SUU) or Dell Update Package (DUP), without impacting the cluster for Microsoft Windows Server 2012, using Microsoft Hotfix Plug-in feature of Cluster-Aware Updating.

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Contents

Executive Summary	3
Introduction	3
Prerequisites	3
Configuring CAU to update Dell Servers using Dell Server Update Utility (SUU)	3
Dell Server Update Utility (SUU) XML for an advanced customization	9
Dell Server Update Utility (SUU) Exit Codes	10
Configure CAU to update Dell Servers using Dell Update Package (DUP)	10
Dell Update Package (DUP) XML for an advanced customization	13
Dell Update Package (DUP) Exit Codes	15
Conclusion	16
More Information (References)	16

Figures

Figure 1. Dell SUU shared folder location	4
Figure 2. Server Manager	4
Figure 3. Cluster-Aware Updating	5
Figure 4. Self-updating schedule	6
Figure 5. Configuring self-updating advanced options	6
Figure 6. Configuring SUU Self-updating Additional Options	7
Figure 7. Self-Updating Run Initialization Confirmation	8
Figure 8. Updating Run status	8
Figure 9. DUP shared folder location	11
Figure 10. Common DUP location	11
Figure 11. DUPs specific to node location	12
Figure 12. Configuring DUP Self-updating Additional Options	13

Executive summary

This white paper describes the process of integrating Dell Server Update Utility (SUU) into a new Windows Server 2012 feature called Cluster-Aware Updating (CAU). Specifically, Dell Update Package (DUP)- based update process integration into Microsoft Hotfix plug-in feature in CAU will help you realize updating firmware and drivers with continuous availability of Dell server clusters running Microsoft® Windows Server® 2012.

This process allows IT Administrators to maintain server uptime while keeping Dell servers updated using either the Dell Server Update Utility (SUU) or individual Dell Update Packages (DUPs).

Introduction

IT Administrators face many challenges in updating the cluster. It requires multiple manual steps with associated planned failover and failback of clustered Roles, all during a short maintenance window of time. This process is highly error-prone and increases the risk of unplanned service outages.

Cluster-Aware Updating (CAU) is a feature in Microsoft Windows Server 2012 that coordinates software updates on all servers in a failover cluster without impacting the service availability. This white paper explains how an IT Administrator can update Dell server firmware and driver using SUU or DUP by integrating Microsoft Hotfix plug-in, feature of Cluster-Aware Updating.

Prerequisites

To take advantage of CAU, the following prerequisites must be met:

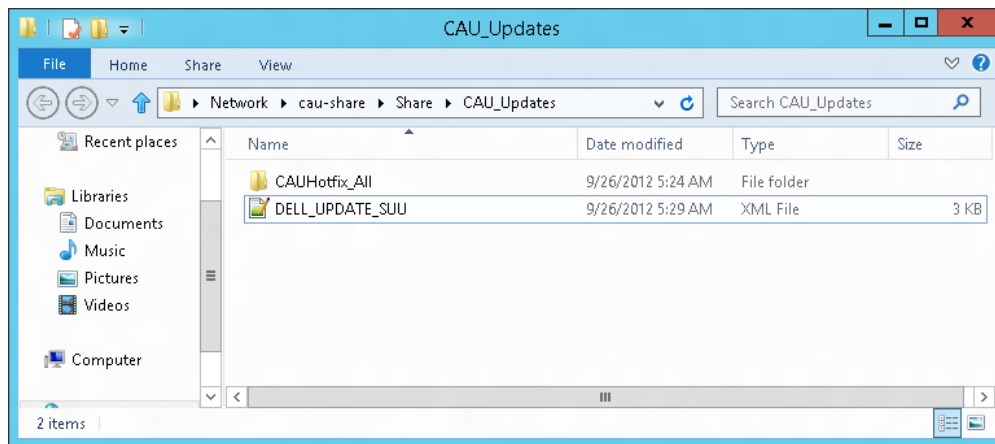
- Clustered servers running Microsoft Windows Server 2012
- Failover cluster feature must be enabled on all nodes
- All servers in the cluster must be in the same Active Directory domain
- Latest Dell Server Update Utility (SUU), DVD must be downloaded from Dell support site.
- XML configuration files for SUU or DUP. The XML files are available at Dell support site and also in More Information

Configuring CAU to update Dell servers using Dell Server Update Utility

Updating the cluster nodes using SUU:

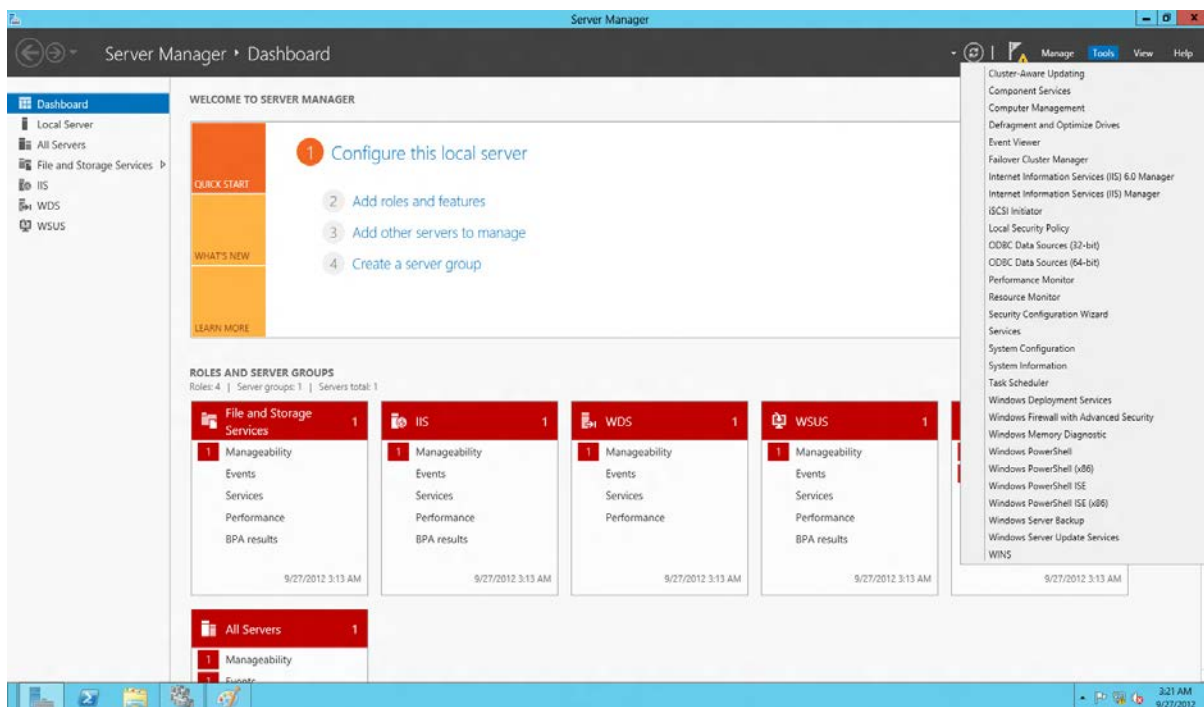
1. Create a shared folder that is accessible to all nodes in the cluster. For example, `\\cau-share\Share\CAU_Updates`.
2. Copy the Dell SUU XML configuration file `DELL_UPDATE_SUU.xml` to the shared folder, `\\cau-share\Share\CAU_Updates`.
3. In the shared folder, create a folder called `CAUHotFix_All`. Extract the files from the Dell SUU DVD to this folder.

Figure 1. Dell SUU shared folder location



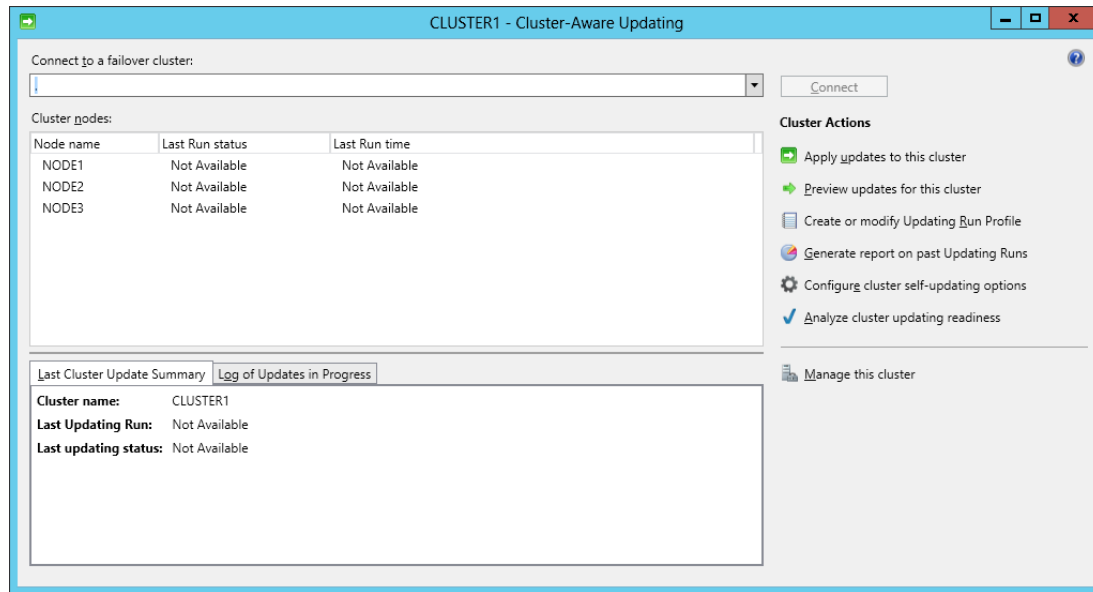
4. Login to any cluster node and launch CAU through Server Manager, click Tools → Cluster-Aware Updating.

Figure 2. Server Manager



5. In the Cluster-Aware Updating window, enter the cluster name or "." (dot) for the current cluster, and then click Connect. All the nodes connected to this cluster displayed.

Figure 3. Cluster-Aware Updating



6. Under **Cluster Actions**, click **Configure cluster self-updating options**.
7. Enable the **Self-updating mode**, and select the **Frequency of self-updating**. You should set frequency to a longer duration, for example 10 years or 20 years as we recommend on-demand update only.

Note: Make sure that the latest SUU build is at hotfix root folder, available before the update. You can download the SUU build from support.dell.com or you can build a custom SUU using Dell Repository Manager (DRM).

For more information on building a custom SUU build using DRM, see:

<http://en.community.dell.com/techcenter/m/videos/20117547.aspx>

Figure 4. Self-updating schedule

The screenshot shows the 'Specify self-updating schedule' step of the 'Configure Self-Updating Options Wizard'. The left sidebar contains a list of steps: 'Getting Started', 'Enable self-updating mode', 'Self-updating schedule' (which is highlighted), 'Advanced Options', 'Additional Options', 'Confirmation', and 'Completion'. The main area is titled 'Specify self-updating schedule' and contains the following settings:

- Frequency of self-updating:** Three radio buttons are present: 'Daily', 'Weekly', and 'Monthly'. The 'Monthly' option is selected.
- Starting:** A date field shows '9/25/2012' and a time field shows '15'.
- Time of day:** A dropdown menu shows '3:00 AM'.
- Day of the week:** A dropdown menu shows 'Tuesday'.
- Occurrence of the day in the month:** A dropdown menu shows 'Third'.

At the bottom of the wizard, there are four buttons: '< Previous', 'Next >', 'Apply', and 'Cancel'.

8. In the **Advanced Options**, select *Microsoft.hotfixplugin* for *CauPluginName*. Specify other options as required.

Figure 5. Configuring self-updating advanced options

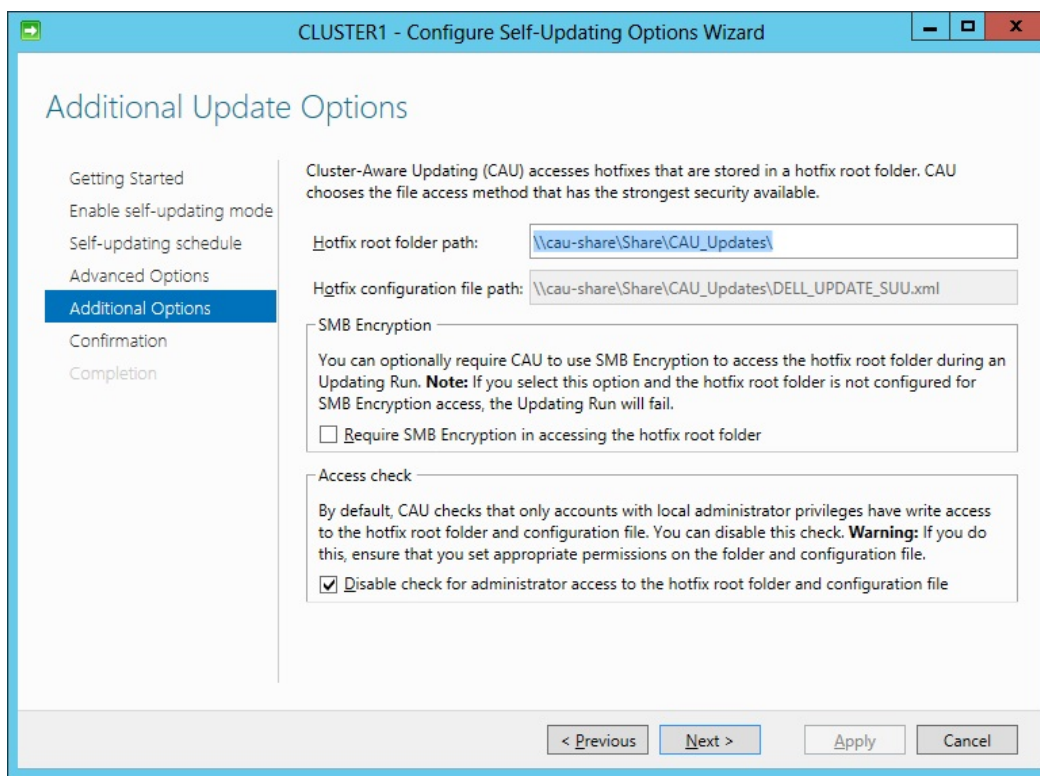
The screenshot shows the 'Advanced Options' step of the 'Configure Self-Updating Options Wizard'. The left sidebar contains a list of steps: 'Getting Started', 'Add Clustered Role', 'Self-updating schedule', 'Advanced Options' (which is highlighted), 'Additional Options', 'Confirmation', and 'Completion'. The main area is titled 'Advanced Options' and contains the following settings:

- Updating Run options based on:** A text field shows 'C:\Windows\system32\defaultparameters.xml' and a 'Browse...' button is next to it.
- Changes to make for this Updating Run only:** A link labeled 'Learn more about profile options' is present.
- RequireAllNodesOnline:** A checkbox labeled 'True' is checked.
- NodeOrder:** A text field with the placeholder 'Type new value or use default.'
- RebootTimeoutMinutes:** A text field with the placeholder 'Type new value or use default.'
- PreUpdateScript:** A text field with the placeholder 'Type new value or use default.'
- PostUpdateScript:** A text field with the placeholder 'Type new value or use default.'
- ConfigurationName:** A text field with the placeholder 'Type new value or use default.'
- CauPluginName:** A dropdown menu showing 'Microsoft.HotfixPlugin'.
- CauPluginArguments:** A text field showing 'HotfixConfigFileName = DELL_UPDATE_SUU.xml'.

At the bottom of the wizard, there are four buttons: '< Previous', 'Next >', 'Apply', and 'Cancel'.

9. In the Advanced Options, type "HotfixConfigFileName = DELL_UPDATE_SUU.xml" for Caupugin Arguments or rename the file DELL_UPDATE_SUU.xml to DefaultHotfixConfig.xml in step 2. For more details, see Figure 1.
10. Click **Additional Options**. Enter the Hotfix root folder path created in step 1.
11. In **Additional Options**, under **Access check**, select **Disable check for administrator access to the hotfix root folder and configuration file** to change security options for the shared folder (hotfix folder) and configuration file.

Figure 6. Configuring SUU Self-updating Additional Options



12. On the **Confirmation** page, click **Apply** and then close the window.
13. Under *Cluster Actions*, click on **Apply update to this cluster**.
14. In the Cluster-Aware Updating Wizard, go to the **Confirmation** wizard, click **Update**, and then close the Cluster-Aware Updating wizard.

Figure 7. Self-Updating Run Initialization Confirmation

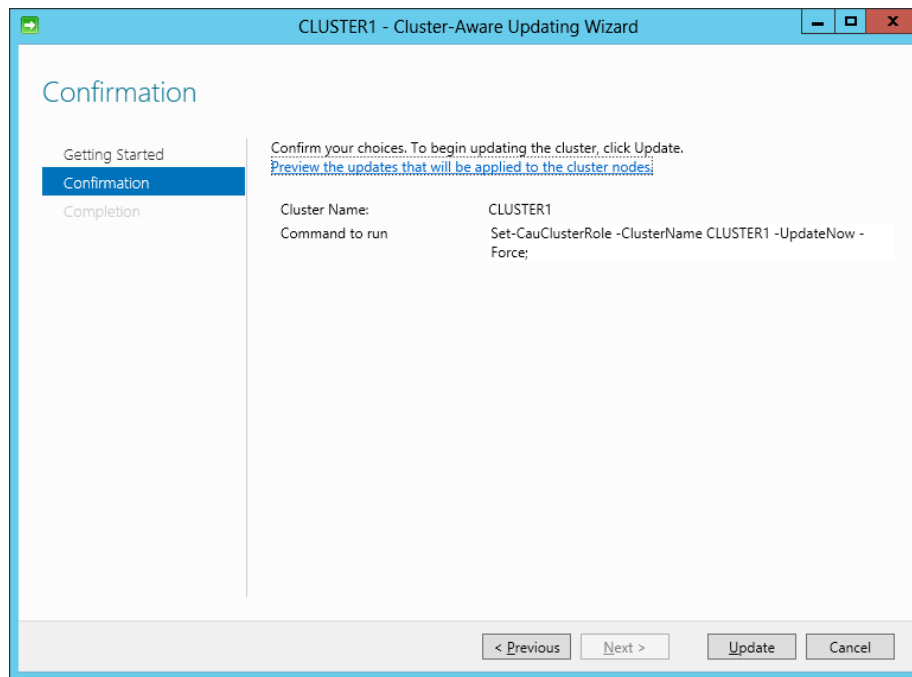
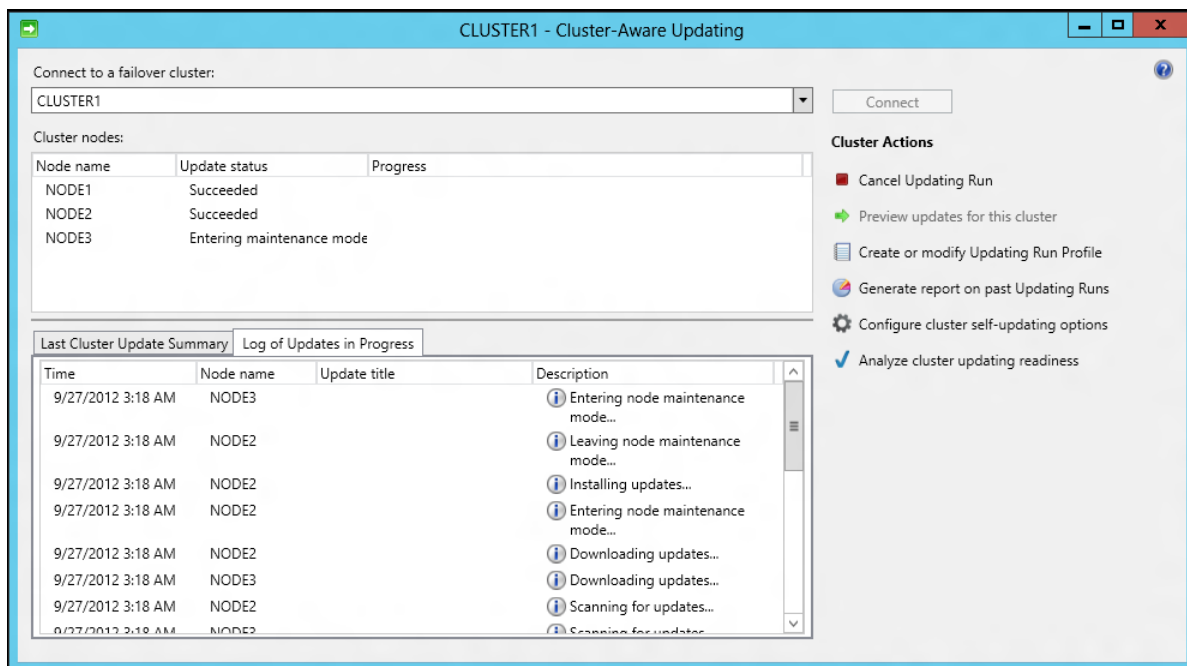


Figure 8. Updating Run status



You can check the progress of the updates from any node in the cluster.

Dell Server Update Utility XML for an advanced customization

You can edit the DELL_UPDATE_SUU.xml configuration file and change the CLI parameters as required. By default, the following command with `-e` parameter is used.

```
<Extension name="cmd">
```

```
<Template path="%systemroot%\system32\cmd.exe" parameters="/c $update$ -e"/>
```

The preceding command searches for `.cmd` file. The `suu.cmd` with `-e` parameter will be executed. The `$update$` is the `suu.cmd` full path name.

Advanced users can execute `suu.cmd` with different parameters as required. If you want to write logs on to a single location for all nodes, change the parameter as below.

```
<Template path="%systemroot%\system32\cmd.exe" parameters="/c $update$ -e -d
```

```
\\SERVERNAME\dirname\ "/>
```

The following table lists SUU CLI commands:

CLI Command Syntax	Command Description
<code>-u -update</code>	Upgrades/downgrades the system component. NOTE: The <code>-u</code> command performs an upgrade and downgrade of the components in your system. Components in the system that are latest version compared to the components in the repository are downgraded, without prompting for any confirmation. This is not always recommended. To perform explicit upgrades or downgrades, use the <i>-upgradeonly</i> or <i>-downgradeonly</i> commands.
<code>-e -upgradeonly</code>	Upgrades all components, whose repository versions are newer than the current versions installed on the system. You cannot upgrade individual components through the CLI. To do this, use the GUI.
<code>-n -downgradeonly</code>	Downgrades all the system components newer than repository components to the repository versions. SUU does not allow you to downgrade individual components.
<code>-d -directory</code>	Directs the event logs to a different directory other than the default location.

Dell Server Update Utility (SUU) Exit Codes

The following table lists the exit codes.

Value	Message Name	Description
0	SUCCESS	The update was successful.
-1	FAILURE	The update was unsuccessful. An error occurred during the update process or admin right is required.
1	REBOOT_REQUIRED	You must restart the system to apply the updates.
2	OTHER_INSTANCE	Another instance of SUU is running.
3	RUN_AFTER_REBOOT	First Reboot and run SUU again.
5	UPDATE_NOT_ALLOWED	Update is not allowed or License required.
7	CONTINUE_ON_FAILURE	Some DUPs successes and some DUPs failed.
8	FAILURE_REQUIRES_REBOOT	DUPs update failed and reboot is required; first reboot system and start SUU update again.

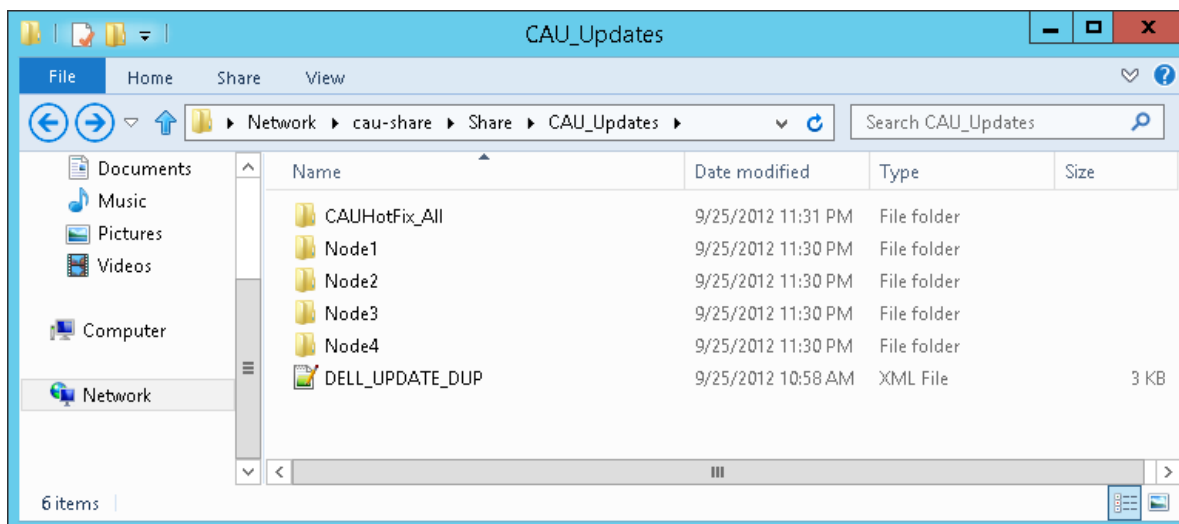
Configure CAU to update Dell Server nodes using Dell Update Package

To update the cluster nodes using DUP:

1. Create a shared folder outside the cluster that is accessible to all nodes in the cluster. For example, \\cau-share\Share\CAU_Updates.
2. Copy the DUP XML configuration file *DELL_UPDATE_DUP.xml* to the shared folder \\cau-share\Share\CAU_Updates.
3. Create a *CAUHotfix_All* folder in the shared folder \\cau-share\Share\CAU_Updates.
4. Under the *CAU_Updates* shared folder, create folders for all nodes in the cluster, and name the folder using the same name as the cluster nodes. For example, Node1, Node2, and Node3 are the cluster node names.
5. Create an additional sub folder for each of the folders created with the cluster node names and the CAUHotfix_All folder. The name of the subfolder should be *Dell-Dups-Rule1*. For example, the folder structure should be *Node1\Dell-Dups-Rule1*, *CAUHotfix_All\Dell-DUPS-Rule1*.

Note: The name of the subfolder should be the same as the name in the configuration XML file. The name given in the configuration XML file is *Dell-DUPS-Rule1*.

Figure 9. DUP shared folder location



- For the DUPs that are common for all nodes in a cluster, copy them into *CAUHotfix_All\DEll-DUPs-Rule1*. For DUPs specific to the nodes in a cluster, copy them to the specific node. For example, copy *Dups specific to Node 1* to *Node1\DEll-DUPs-Rule1*.

Figure 10. Common DUP location

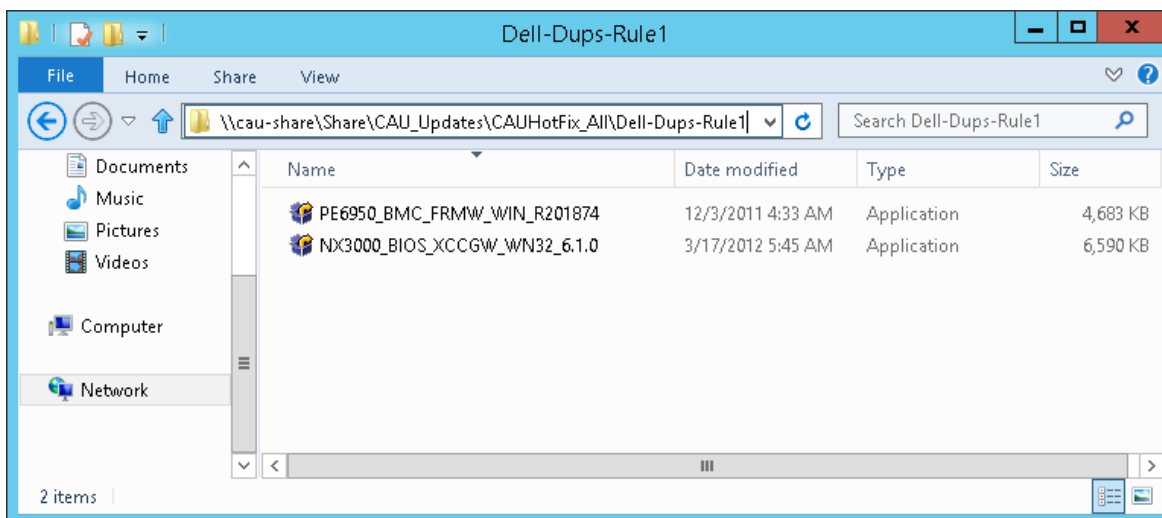
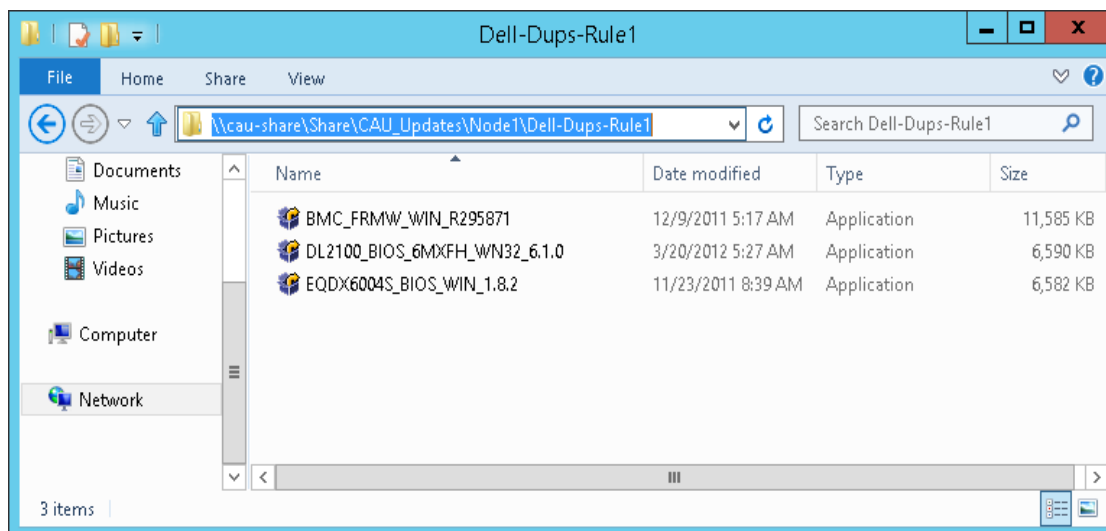


Figure 11. DUPs specific to node location

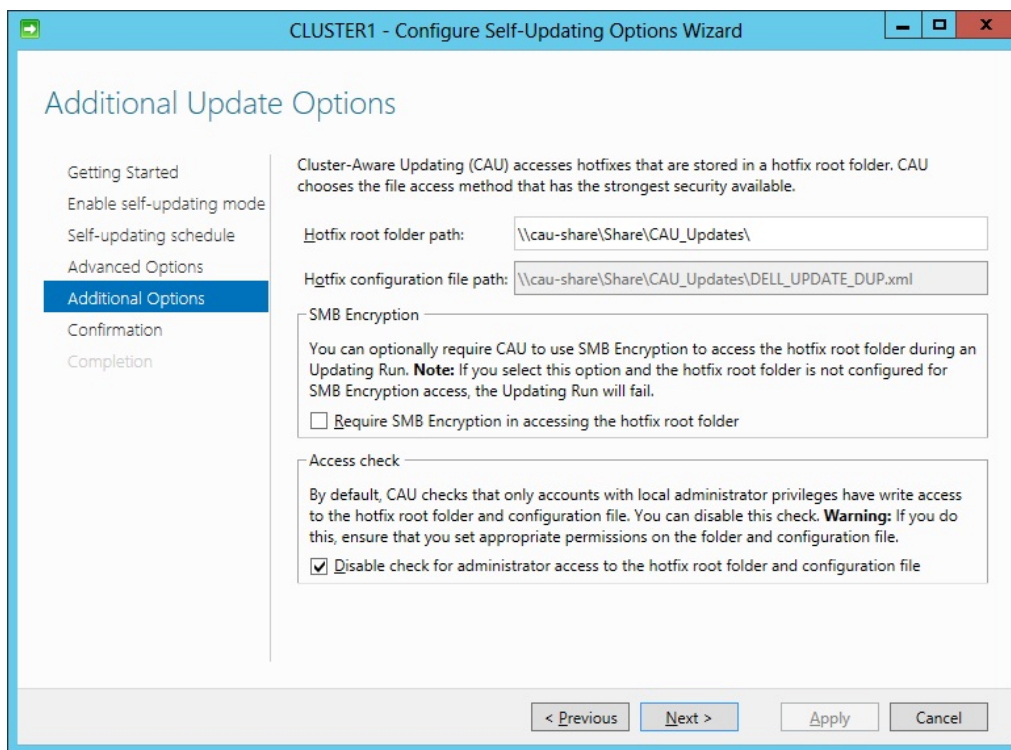


7. Launch CAU through Server Manager, and click **Cluster-Aware Updating** in Tools. For more details, see Figure 2.
8. In the *Cluster-Aware Updating* window, enter the cluster name or "." (Dot) for the current cluster, and then click **Connect**. All nodes connected to this cluster are displayed. For more details, see Figure 3.
9. Under *Cluster Actions* click **Configure Cluster Self-updating Options**.
10. Enable the self-updating mode and select the frequency of Self-updating. For more details, see Figure 4. You should set frequency for a longer duration, for example 10 years or 20 years as we recommend on-demand update only.

Note: Make sure the latest DUP is available at hotfix root folder before the start of the Updating Run. You can download the DUP from support.dell.com

11. In the **Advanced Options**, select *Microsoft.hotfixplugin* for *CauPluginName*. You can select other options as required. See Figure 5.
12. In the **Advanced Options**, enter "HotfixConfigFileName = DELL_UPDATE_DUP.xml" for **Cauplugin Arguments** or rename the file DELL_UPDATE_DUP.xml to DefaultHotfixConfig.xml in step 2. For more details, see Figure 9.
13. In the **Additional Options**, indicate the Hotfix root folder path created in Step 1.
14. In **Additional Options**, under Access Check, select **Disable check for administrator access to the hotfix root folder and configuration file** to change the security option for shared folder (hotfix folder) and configuration file.

Figure 12. Configuring DUP Self-updating Additional Options



15. Click **Apply** in the confirmation option wizard and close the window.
16. Under *Cluster Actions*, click on **Apply update to this cluster**.
17. In the *Cluster-Aware Updating Wizard*, go to Confirmation wizard, click **Update** and close the Cluster-Aware Updating Wizard. For more details, see Figure 9.
18. The progress of the updates can be checked from any node in a cluster. For more details, see Figure 8.

Dell Update Package XML for an advanced customization

You can edit the DELL_UPDATE_DUP.xml configuration file and change the CLI parameters as required. By default, the following command with /s parameter is used.

```
<Folder name="Dell-Dups-Rule1" alwaysReboot="false">
```

```
<Template path="$update$" parameters="/s " />
```

The folder name given by default in XML configuration file is *Dell-Dups-Rule1*. The same name has to be given for the subfolders created under CAUHotfix_All and folder with Node names. For more details, see Step 5.

If the folder name is changed, the same name has to be indicated in the XML configuration file.

The `$update$` is DUPs full path name available in the folder *Dell-Dups-Rule1*. The DUPs are executed with the /s parameter.

Advanced users can execute different parameters as required. If you want to write logs to a single location for all nodes, use the following command:

```
<Template path="$update$" parameters="/s
/l=\\ServerName\sharedFolder\uniqueFileName" />
```

Note: Do not use '/r' parameter to launch DUP in DUP configuration XML.

The following table lists the DUP CLI commands:

CLI Option	CLI Task Description	Command Syntax
/e=<path> Extract option	<p>Extracts all the files contained in the Update Package in the specified path. If the directory specified in the path does not exist, it is created.</p> <p>If the path contains spaces, use quotation marks around the <path> value.</p> <p>The /s option is required with this option.</p> <p>Options /f, /c, and /r are not valid with this option.</p>	<p>packagename.exe /s /e=c:\update</p> <p>packagename.exe /s /e="c:\update files"</p>
/f Force option	<p>Allows reinstallation or downgrade of the software to a previous (older) version.</p> <p>The /s option is required with this option.</p> <p>Options /e and /c are not valid with this option.</p>	<p>packagename.exe /s /f /l=c:\pkg.log</p>
/l=<filename> Log option	<p>Appends logged messages to a specified ASCII file; creates a new file if one does not exist. If the file name contains spaces, use quotation marks around the <filename> value.</p> <p>The /s option is required with this option.</p>	<p>packagename.exe /s /l=c:\pkg.log</p> <p>packagename.exe /s /l="c:\Update Log\pkg.log"</p>
/r Reboot option	<p>Reboots the system, if required, after performing the update. The reboot does not occur:</p> <ul style="list-style-type: none"> • If the Update Package fails or is not applicable to the target system. • If the Update Package does not require a reboot. <p>The /s option is required with this option.</p>	<p>packagename.exe /s /r /l=c:\pkg.log</p>

	Options /e and /c are not valid with this option.	
/s Silent option	Executes the update silently without user intervention. When /s is not specified, the Update Package is launched in GUI (interactive) mode. The /s option is required when using the /e, /f, /c, /l, and /u options.	packagename.exe /s /l=c:\pkg.log
/u=<filename> Unicode Log option	Appends logged messages to a specified unicode file; creates a new file if one does not exist. If the file name contains spaces, use quotation marks around the <filename> value. The /s option is required with this option.	packagename.exe /s /u=c:\pkg.log packagename.exe /s /u="c:\Update Log\pkg.log"

Dell Update Package (DUP) Exit Codes

The following table lists the exit codes.

Value	Message Name	Description
0	SUCCESS	The update was successful.
1	UNSUCCESSFUL	The update was unsuccessful. An error occurred during the update process.
2	REBOOT_REQUIRED	You must restart the system to apply the updates.
3	DEP_SOFT_ERROR	Possible explanations include: <ul style="list-style-type: none"> You attempted to update to the same version of the software. You tried to downgrade to a previous version of the software.
4	DEP_HARD_ERROR	The required prerequisite software was not found on your system.
5	QUAL_HARD_ERROR	The Update Package is not applicable. Possible explanations include: <ul style="list-style-type: none"> The operating system is not supported by the Update Package. The system is not supported by the Update Package. The Update Package is not compatible with the devices found in your system.

6	REBOOTING_SYSTEM	The system is being rebooted.
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Conclusion

IT administrators can keep nodes in the Microsoft Windows 2012 cluster up to date in the datacenter by downloading the Dell Server Update Utility (SUU) or Dell Update Package (DUP) plug-in and then integrating with the Cluster-Aware Updating feature.

More Information (References)

XML for Update system Through SUU



(Click on the attachment to view the XML for SUU)

XML for Update system Through DUP



(Click on the attachment to view the XML for DUP)

Videos for updating system through CAU

- <http://en.community.dell.com/techcenter/m/videos/20232734.aspx>
- <http://en.community.dell.com/techcenter/m/videos/20232739.aspx>

CAU Scenario Overview:

"<http://technet.microsoft.com/en-us/library/hh831694.aspx>"

CAU Windows PowerShell cmdlets

<http://go.microsoft.com/fwlink/p/?LinkId=237675>

Cluster-Aware Updating: Frequently Asked Questions

<http://technet.microsoft.com/en-us/library/hh831367.aspx>

Starting with Cluster-Aware Updating: Self-Updating

<http://blogs.technet.com/b/filecab/archive/2012/05/17/starting-with-cluster-aware-updating-self-updating.aspx>

Requirements and Best Practices for Cluster-Aware Updating

<http://technet.microsoft.com/en-us/library/jj134234.aspx>

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