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

This white paper is a guide for integrating Dell firmware and driver updates using the Dell Server Update Utility (SUU)/Dell Update Package (DUP) for Microsoft Windows Server 2012 based cluster without affecting the availability of cluster in conjunction with Microsoft Hotfix Plug-in.

> Author(s) Ummed Choudhary Ajay Pradeep



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October 2012 | Rev 1.0

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Executive Summary

This white paper describes the process of updating the Microsoft Windows Server 2012 clustered Dell servers using Dell Server Update Utility (SUU)/Dell Update Package (DUP) by integrating with Microsoft Hotfix Plug-in.

This document explains the process to update Dell Server firmware and driver in a cluster without affecting the availability of cluster. Using Cluster Aware Update (CAU), the IT administrator can keep the Dell servers up to date with Dell Server Update or individual Dell Update Package.

Introduction

IT Administrators face many challenges today 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 Update (CAU) is a feature in Microsoft Windows Server 2012 that coordinates software updates on all servers in a failover cluster in a way that does not impact the service availability. This white paper explains how an IT Administrator can update Dell Server firmware and driver using Dell Server Update Utility (SUU)/Dell Update Package (DUP) by integrating with Microsoft Hotfix plug-in.

Prerequisites

To take advantage of Cluster Aware Update, the following pre-requisites must be met:

- Cluster with Microsoft Windows Server 2012 available.
- Failover Clustering 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 and DUP. The XML files are available on the Dell Support Site.

Configuring CAU to update Dell servers using Dell Server Update Utility (SUU)

To update the cluster nodes using SUU:

- 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 SUU XML configuration file *DELL_UPDATE_SUU.xml* in the shared folder *cau-share\Share\CAU_Updates*
- 3. Create a *CAUHotFix_All* folder under the shared folder. Extract SUU DVD and copy the contents into this folder.

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Documents	DELL_UPDATE_SUU	9/26/2012 5:29 AM	XML File	3 KB
J Music				
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🚼 Videos				
🖳 Computer				
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2 items				<u>:</u>

Figure 1. SUU Shared folder location

4. Launch CAU through Server Manager and click Cluster-Aware Updating in Tools.

Figure 2. Server Manager

Server Ma	anager • Dashboard				🗇 🍢 Manage Tools View Help
Dashboard	WELCOME TO SERVER MANAGER				Cluster-Aware Updating Component Services Computer Management
i Local Server ■ All Servers 電 File and Storage Services ● IIS 同 WDS ② WSUS	CURCKSTART 2 Add 3 Add WHATS NEW 4 Crea	ure this local server roles and features other servers to manage te a server group			Detrogenent and Optimula Univers Event Viewer Fallover Chater Manager Internet Information Services (IIS) 60 Manager Internet Information Services (IIS) Manager Idcal Security Policy CDBC Data Sources (I2-bit) CDBC Data Sources (I2-bit) CDBC Data Sources (I4-bit) Performance Monitor Redource Monitor Sorubit Confusetation Winerd
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	All Servers 1 Manageability				

5. In the Cluster-Aware Updating window, enter the cluster name or "." (Dot) for current cluster and then click **connect**. All the nodes connected to this cluster will be shown.

		CLU	STER1 - Cluster-Aware Updating
Connect <u>t</u> o a failo	ver cluster:		€ Connect
Cluster <u>n</u> odes:			Cluster Actions
Node name NODE1 NODE2 NODE3	Last Kun status Not Available Not Available Not Available	Last kun time Not Available Not Available Not Available	 Apply updates to this cluster Preview updates for this cluster Create or modify Updating <u>Run Profile</u> Generate report on past Updating Runs Configure cluster self-updating options Analyze cluster updating readiness
Last Cluster Upd Cluster name: Last Updating F Last updating s	ate Summary Log of Upda CLUSTER1 kun: Not Available tatus: Not Available	tes in Progress	<u>M</u> anage this cluster

Figure 3. Cluster Aware Updating

- 6. Click on Configure Cluster self-updating Options under Cluster Actions.
- 7. Enable the *Self-updating mode* and select the frequency of Self-updating.

Note: When scheduling an update, make sure the latest SUU build is available before the scheduled time of update. You can download the SUU build from support.dell.com or you can build a custom SUU using Dell Repository Manager.

For more information on building a custom SUU build using Dell Repository Manager, go to:

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

	Configure Self-Updating Options Wizard	• • ×
Specify self-updat Getting Started Enable self-updating mode Self-updating schedule Advanced Options Additional Options Confirmation Completion	Frequency of self-updating: Daily Weekly Monthly Starting: 9/25/2012 Ime of day: 3:00 AM Day of the week: Tuesday Qccurrence of the day in the month: Third	
	< <u>Previous</u> <u>Apply</u>	Cancel

Figure 4. Self-updating schedule

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

	Configure Self-Updatin	g Options Wizard	_ 🗆 X
Advanced Option	S		
Getting Started	Updating Run options based on:		
Enable self-updating mode	Current Self-Opdating Kun options		<u>B</u> rowse
Self-updating schedule	Changes to make for this Updating I	Run only:	
Advanced Options	Learn more about profile options	,	
Additional Options	MaxFailedNodes	Type new value or use default.	
	Paguina All Nadas Online		
	RequireAnivodesOnine		
	NodeOrder	Type new value or use default.	
	RebootTimeoutMinutes	Type new value or use default.	
	PreUpdateScript	Type new value or use default.	
	PostUpdateScript	Type new value or use default.	=
	ConfigurationName	Type new value or use default.	
	CauPluginName	Microsoft.HotfixPlugin	•
	CauPluginArguments		
		< <u>P</u> revious <u>N</u> ext > <u>Apply</u>	Cancel

Figure 5. Configuring Self-updating Advanced Options

9. In the Advanced Options, indicate the Hotfix root folder path created in Step 1 and DELL_UPDATE_SUU.xml Hotfix configuration file path.

	CLUSTER1 - Configure Self-Updating Options Wizard
Additional Update Getting Started Enable self-updating mode Self-updating schedule Advanced Options Additional Options Confirmation Completion	Cluster-Aware Updating (CAU) accesses hotfixes that are stored in a hotfix root folder. CAU chooses the file access method that has the strongest security available. Hotfix root folder path: \\cau-share\Share\CAU_Updates Hotfix configuration file path: \\cau-share\Share\CAU_Updates\DELL_UPDATE_SUU.xml SMB Encryption You can optionally require CAU to use SMB Encryption to access the hotfix root folder during an Updating Run. Note: If you select this option and the hotfix root folder is not configured for SMB Encryption in accessing the hotfix root folder Access check By default, CAU checks that only accounts with local administrator privileges have write access to the hotfix root folder and configuration file. You can disable this check. Warning: If you do this, ensure that you set appropriate permissions on the folder and configuration file. Methods and the hotfix root folder and configuration file.
	< <u>P</u> revious <u>N</u> ext > <u>Apply</u> Cancel

Figure 6. Configuring SUU Self-updating Additional Options

- 10. Click **Apply** in the confirmation option and then close the window.
- 11. Click on Apply update to this cluster under *Cluster Actions*.
- 12. In the *Cluster-Aware Updating Wizard*, go to the Confirmation wizard, click **Update** and then close the Cluster-Aware Updating Wizard.

	CLUSTER1 - Cluster-Aw	vare Updating Wizard
Confirmation		
Getting Started	Confirm your choices. To begin u Preview the updates that will be	pdating the cluster, click Update. applied to the cluster nodes
Completion	Cluster Name: Command to run	CLUSTER1 Set-CauClusterRole -ClusterName CLUSTER1 -UpdateNow - Force;
		< Previous Next > Update Cancel

Figure 7. Figure 7 Update Confirmation

The progress of the updates can be checked from any node in a cluster.

Figure 8. Preview Updates

			CLUSTER1 - Cluster-Aware Updating	_ D X
Connect to a failover c	luster:			0
CLUSTER1				▼ Connect
Cluster nodes:				Cluster Actions
Node name NODE1 NODE2 NODE3	Update status Succeeded Succeeded Entering maintena	Progress		 Cancel Updating Run Preview updates for this cluster Create or modify Updating Run Profile Generate report on past Updating Runs Configure cluster self-updating options
Last Cluster Opdate S	Node name	lindates in Progress	Description	 Analyze cluster updating readiness
9/27/2012 3:18 AM	NODE3	opulie une	Entering node maintenance mode	
9/27/2012 3:18 AM	NODE2		 Leaving node maintenance mode 	-
9/27/2012 3:18 AM	NODE2		 Installing updates 	
9/27/2012 3:18 AM	NODE2		 Entering node maintenance mode 	
9/27/2012 3:18 AM	NODE2		 Downloading updates 	
9/27/2012 3:18 AM	NODE3		 Downloading updates 	
9/27/2012 3:18 AM	NODE2		 Scanning for updates 	
0/27/2012 2:10 AM	NODES		C Scanning for undator	

Dell Server Update Utility (SUU) XML Configuration

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 above command searches for .cmd extension 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
-u -update	Upgrades/downgrades the system component. NOTE: The -u command performs an upgrade and downgrade of the components in your system. Components in your system that are of a higher version than the components in the repository are downgraded without prompting you for confirmation. This is not always recommended. To perform explicit upgrades or downgrades, use the -upgradeonly or -downgradeonly commands.
-e - upgradeonly	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.
-n - downgradeonly	Downgrades all the system components newer than repository components to the repository versions. SUU does not allow you to downgrade individual components.
-d -directory	Directs the event logs to a different directory 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 (DUP)

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, <u>\\cau-share\Share\CAU_Updates</u>
- 2. Copy the DUP XML configuration file *DELL_UPDATE_DUP.xml* in the shared folder <u>\\cau-share\Share\CAU_Updates</u>.
- 3. Create a CAUHotfix_All folder in the shared folder <u>\\cau-share\Share\CAU_Updates</u>.
- 4. Under the *CAU_Updates* shared folder, create folders for all the nodes in the cluster and name the folder the same way 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*.

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F는 Computer 역 Network	Node3 Node4 DELL_UPDATE_DUP	9/25/2012 11:30 PM File folder 9/25/2012 11:30 PM File folder 9/25/2012 10:58 AM XML File	3 KB
бitems	v	III	

Figure 9. DUP Shared folder location

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

Figure 10. Common DUP location

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Figure 11. DUPs specific to Node location

- 7. Launch CAU through Server Manager and click **Cluster-Aware Updating** in Tools. Refer to Figure 2 Server Manager.
- 8. In the *Cluster-Aware Updating* window, enter the cluster name or "." (Dot) for current cluster and click **connect**. All the nodes connected to this cluster will be shown. Refer to Figure 3 Cluster-Aware Updating.
- 9. Click on Configure Cluster self-updating Options under Cluster Actions.
- 10. Enable the self-updating mode and select the frequency of Self-updating. Refer to Figure 4 Self-updating schedule.

Note: When scheduling an update, make sure the latest DUP is available before the scheduled time of update. 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, Configuring Self-updating Advanced Options.
- 12. In the Additional Options, indicate the Hotfix root folder path created in Step 1 and the DELL_UPDATE_DUP.xml hotfix configuration file path.

	CLUSTER1 - Configure Self-Updating Options Wizard
 Additional Updat Getting Started Enable self-updating mode Self-updating schedule Advanced Options Additional Options Confirmation Completion 	CLUSTER1 - Configure Self-Updating Options Wizard CLUSTER1 - Configure Self-Updating Options Wizard Cluster-Aware Updating (CAU) accesses hotfixes that are stored in a hotfix root folder. CAU chooses the file access method that has the strongest security available. Hotfix root folder path: \\cau-share\Share\CAU_Updates Hotfix configuration file path: \\cau-share\Share\CAU_Updates\DELL_UPDATE_DUP.xml SMB Encryption SMB Encryption You can optionally require CAU to use SMB Encryption to access the hotfix root folder during an Updating Run. Note: If you select this option and the hotfix root folder is not configured for SMB Encryption access, the Updating Run will fail. Require SMB Encryption in accessing the hotfix root folder Access check By default, CAU checks that only accounts with local administrator privileges have write access to the hotfix root folder and configuration file. W bisable check for administrator access to the hotfix root folder and configuration file.
	< Previous Next > Apply Cancel

Figure 12. Configuring DUP Self-updating Additional Options

- 13. Click **Apply** in the confirmation option wizard and close the window.
- 14. Click on Apply update to this cluster under Cluster Actions.
- 15. In the *Cluster-Aware Updating Wizard*, go to Confirmation wizard, click **Update** and close the Cluster-Aware Updating Wizard. Refer to Figure 9, Update Confirmation.
- 16. The progress of the updates can be checked from any node in a cluster. Refer to Figure 8 Preview updates.

Dell Update Package (DUP) XML Configuration

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. Refer to 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 on to a single location for all nodes, use the following command:

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

The following table lists the DUP CLI commands:

CLI Option	CLI Task Description	Command Syntax
/e= <path> Extract option</path>	Extracts all files contained in the Update Package to the path you specify. If the directory specified in the path does not exist, it is created.	packagename.exe /s /e=c:\update
	If the path contains spaces, use quotation marks around the <path> value.</path>	packagename.exe /s /e="c:\update files"
	The /s option is required with this option.	
	Options /f, /c, and /r are not valid with this option.	
/f	Allows reinstallation or downgrade of the software to a previous (older) version.	packagename.exe /s /f /l=c:\pkg.log
Force option	The /s option is required with this option.	
	Options /e and /c are not valid with this option.	
/I= <filename> Log option</filename>	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.</filename>	packagename.exe /s /I=c:\pkg.log
	The /s option is required with this option.	packagename.exe /s /I="c:\Update Log\pkg.log"
/r Reboot option	Reboots the system, if required, after performing the update. The reboot does not occur:	packagename.exe /s /r /l=c:\pkg.log
Reboot option	 If the Update Package fails or is not applicable to the target system 	
	If the Update Package does not require a reboot	
	The /s option is required with this option.	
	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.	packagename.exe /s /I=c:\pkg.log
	The /s option is required when using the /e, /f, /c, /I, and /u	

	options.	
/u= <filename> Unicode Log option</filename>	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.</filename>	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: 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: 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.

Conclusion

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

More Information (References)

XML for Update system Through SUU

www.dell.com <TBD>

XML for Update system Through DUP

www.dell.com <TBD>

Video for updating system through CAU

www.dell.com <TBD>

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-selfupdating.aspx

Requirements and Best Practices for Cluster-Aware Updating

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