



Automatic Backup Server Profile in Dell PowerEdge 12th Generation Servers

A Dell Technical White Paper on scheduling periodic Automatic Backup Server Profile using various interfaces such as RACADM, WS-Man, iDRAC GUI, and Lifecycle Controller

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Executive Summary

To prevent server downtime for long duration that is caused by corrupted firmware, incorrect configuration changes, or motherboard damage, Dell recommends you to back up the server profile and save in an external location or storage device. When the server is not functional because of the aforesaid reasons, Lifecycle Controller provides a feature to backup and export the server profile to a vFlash Card or a CIFS or NFS share, and then restore the earlier saved server profile. It also provides a mechanism to schedule the server profile backup at periodic intervals.

This whitepaper aims at providing detailed information about scheduling periodic automatic backup of server profile using various interfaces such as WS-Man, RACADM, and iDRAC Web GUI.



1 About Automatic Backup Server Profile

Lifecycle Controller allows you to create a copy of the server's profile on the vFlash SD card attached to a server, or on a CIFS or NFS share on the network. The server profile includes server component configuration and firmware installed on various components on the server. For more information about the supported components, see Supported Components available <where?>. Whenever a firmware is corrupted, configuration changes are incorrect, or the motherboard is replaced, you can use the backup image to restore the server to its previously-stored profile. It is recommended that an Automatic Backup Server Profile be scheduled at periodic intervals to allow for regular backups. A backup image file contains:

- Readable
 - System identification information such as model number and service tag. For example, R720 and 1P3H8BS.
 - Date and time the backup was completed
 - Currently installed hardware inventory information
 - Firmware for each component
- Encrypted
 - Component configuration information
 - User name and password for RAID controller and BIOS
 - Component certificates
 - Licenses
 - Signature to validate backup file has not been tampered with and was generated by Lifecycle Controller

A backup image does not contain:

- Operating system or any data stored on hard disk drives (HDDs) or virtual drives (VDs)
- vFlash SD card partition information
- Lifecycle log
- Dell diagnostics
- Dell OS Driver Pack
- Local Key Management (LKM) passphrase if the LKM-based storage encryption is enabled. However, you must provide the LKM passphrase after performing the restore operation.

1.1 Prerequisites

Make sure that the following prerequisites are met before performing a backing up a server profile:

- A software license for 12th generation Dell PowerEdge servers. For more information about managing licenses using iDRAC Web interface, click **Overview** → **Server** → **Licenses**, and then click **Help** in the upper-right corner.
- A server must have a valid service tag (7 characters).
- vFlash SD card must be installed and initialized for backing up to vFlash.
- A network share (CIFS or NFS) with sufficient storage space must be configured for backing up to the network share.



2 Backing up Server Profile

2.1 Using RACADM

```
racadm systemconfig backup -f <filename> <target> [-n <passphrase>]
-time <time> -dom <DayOfMonth> -wom <WeekOfMonth> -dow <DayOfWeek>
-rp <repeat> -mb <MaxBackup>

<target> can be any of the following with listed options
-l <location> -u <user> -p <password>
--vFlash
```

2.2 Usage Examples

To back up system to CIFS share and encrypt data by running a command at command line interface (CLI)

```
racadm systemconfig backup -f <Image Name> -l //<Share IP>/<Share
Name> -u <UserName> -p <Password> -n <Encryption Passphrase>
```

To back up system to NFS share and encrypt data by running the command at CLI:

```
racadm systemconfig backup -f image.img -l 192.168.2.140:/share -
u admin -p passwd -n encryptpasswd123
```

To back up system to vFlash SD by running a command at CLI Backup system to vFlash SD:

```
racadm systemconfig backup --vFlash
```

Note: For remote RACADM, also enter the `-r <HostName>` `-u <user name>` and `-p <password>` options in the command.



2.3 Using WS–Man

The BackupImage() method of the DCIM_LCService class is used to create a backup server profile using WS–Man. The profile for [LC Management Profile](#) contains detailed information about this method. The [LC Best Practices Guide](#) available at [delltechcenter/lc](#) provides more information about scripting this command. A job ID is returned by the command and can be used to query the status of the backup command.

2.3.1 Usage Examples

1. Using WINRM client on Windows

```
winrm i BackupImage http://schemas.dmtf.org/wbem/wscim/1/cim-  
schema/2/root/dcim/DCIM_LCService?SystemCreationClassName=DCIM_ComputerSystem  
+CreationClassName=DCIM_LCService+SystemName=DCIM:ComputerSystem+Name=DCIM:LC  
Service -u:<username> -p:<password> -r:https://<IDRAC_IP_ADDRESS>/wsman -  
SkipCNCheck -SkipCACheck -encoding:utf-8 -a:basic -file:backupinput.xml
```

The backupinput.xml file contains the parameters for the BackupImage() method provided in an XML format. A sample XML file is given here.

```
<p:BackupImage_INPUT xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-  
schema/2/root/dcim/DCIM_LCService">  
  <p:ShareType>4</p:ShareType>  
  <p:Username>user</p:Username>  
  <p>Password>pass</p>Password>  
  <p:IPAddress>10.92.11.100</p:IPAddress>  
  <p:Passphrase>passp</p:Passphrase>  
  <p:UntilTime>04:44:45</p:UntilTime>  
  <p:ImageName>backup.img</p:ImageName>  
</p:BackupImage_INPUT>
```

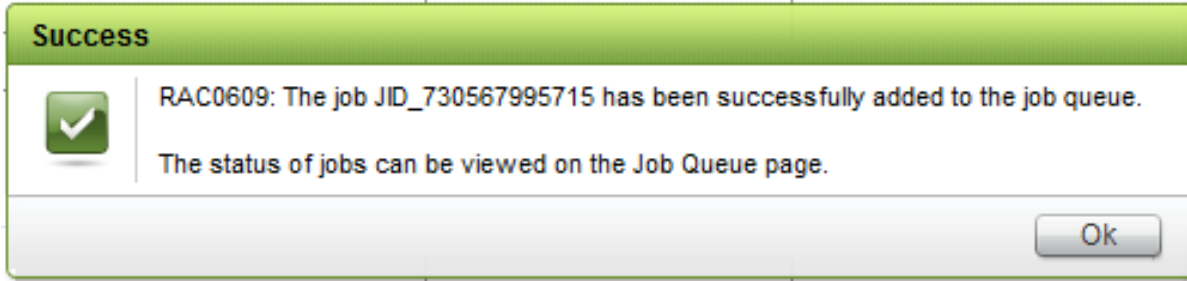


2.4 Using the iDRAC GUI

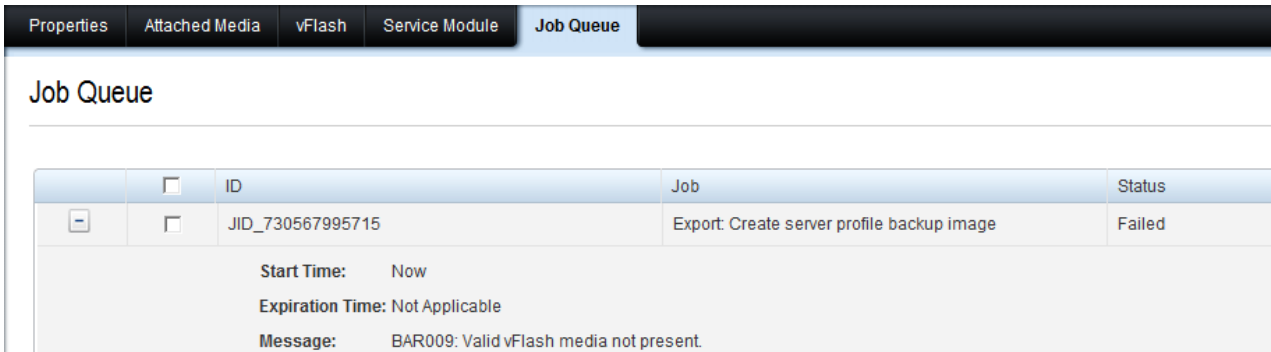
1. Log in to the iDRAC Web GUI by typing the IP address or hostname of the iDRAC in the address bar, and then typing appropriate information. You must have the 'login' and 'server control' privileges.
2. In the left pane, click **iDRAC Settings** -> **Server Profile**.

The screenshot displays the 'Server Profile' configuration page in the iDRAC Web GUI. The page is titled 'Backup and Export Server Profile' and features a navigation bar with 'Backup and Export' and 'Import' tabs. Below the navigation bar, there are icons for printing, refreshing, and help. The main content area is divided into two sections: 'Backup' and 'Automatic Backup'. The 'Backup' section is active and contains two sub-sections: 'File Settings and Security' and 'Network Settings'. In the 'File Settings and Security' section, there are radio buttons for 'Network' and 'vFlash', and input fields for 'File Name', 'Backup File Passphrase (optional)', and 'Confirm Passphrase'. In the 'Network Settings' section, there are input fields for 'IP Address', 'Share Name', 'Domain Name', 'User Name', and 'Password', along with a dropdown menu for 'Protocol' set to 'CIFS'. A 'Test network connection' link is located below the 'Password' field. A 'Backup Now' button is positioned at the bottom right of the form.

3. Select the location for the backup and type details such as file name and passphrase. Click **Backup Now**. The Backup Server Profile operation is performed and a Job ID is returned.



- The status of the job can be monitored by going to **Server** → **Job Queue**.



2.4.1 Using Lifecycle Controller

This whitepaper provides additional information about Backup Server Profile using Lifecycle Controller.

[Lifecycle Controller Backup & Restore in Dell PowerEdge 12th Generation Servers](#)



3 Scheduling Automatic Backup Server Profile

Backup Server Profile can be scheduled to run at periodic intervals. iDRAC will periodically create a profile and store it in a selected CIFS or NFS network share, or a vFlash SD card. A vFlash SD card stores only one image at a time. Newer backup server profile replaces the image stored earlier. Network shares allow up to 50 images. New images are suffixed with the index number of an image. The frequency of the backups can be configured by selecting the Day of Week, Week of Month, Day of Month along with a Repeat parameter. By default, the automatic scheduling is disabled. You must enable this feature, and then configure the schedule using one of the following methods.

3.1 Using RACADM Commands

1. Enable the Automatic Backup feature.

```
racadm set lifecyclecontroller.lcattributes.autobackup 1
```

2. Schedule the Automatic Backup operation.

```
racadm systemconfig backup -f <filename> <target> [-n <passphrase>] -  
time <time> -dom <DayOfMonth> -wom <WeekOfMonth> -dow <DayofWeek> -rp  
<repeat> -mb <MaxBackup>
```

<target> can be any of the following with listed options -l <location>
-u <user> -p <password> --vFlash

Valid Options:

-n : A passphrase used to encrypt/decrypt the configuration data.

-l : Network share location, can be either CIFS or NFS.

-f : Image file name. This option is not required for --vflash.

-u : Username for the remote share access.

-p : Password for the remote share access.

--vflash : Choose vFlash SD as target location for Backup.

-time : Time to schedule an autobackup in HH:MM format. This option has to be specified.

-dom : Day of Month to schedule an autobackup. Valid values are 1-28, L(Last day) or '*' (default - any day).

-wom : Week of Month to schedule an autobackup. Valid values are 1-4, L(Last week) or '*' (default - any week).

-dow : Day of Week to schedule an autobackup. Valid values are sun-sat or mon,tue or '*' (default - any day).



Note: The `-dom`, `-wom`, or `-dow` options should be included in the command for the autobackup schedule

- if `-dom` option is included in the command, then `-wom` and `-dow` options should not be included.
- if `-wom` option is included in the command, then only `-dow` option should be included.
- if `-dom` or `-wom` option is non-`'*'`, then the autoupdate is scheduled for every month.
- if `-dom` and `-wom` options are `'*'` and `-dow` option is non-`'*'`, then the autobackup is scheduled for every week.
- if `-dom`, `-wom`, and `-dow` options are `'*'`, then the autobackup is scheduled to repeat each day.

`-rp` : Repeat parameter. This option has to be specified.

- if `-dom` is specified, then valid values for `-rp` are 1-12.
- if `-wom` is specified, then valid values for `-rp` are 1-52.
- if `-dow` is specified, then valid values for `-rp` are 1-366.

`-mb` : Maximum Backup parameter. For `--vflash` maximum backup is 1.

3.1.1 Usage Examples

AutoBackup system to a CIFS share and encrypt the data:

```
racadm systemconfig backup -f image.img -l //192.168.2.140/share -u admin -p passwd -n
encryptpasswd123 -time 14:30 -dom 1 -rp 6 -mb 10
```

AutoBackup system to an NFS share and encrypt the data:

```
racadm systemconfig backup -f image.img -l 192.168.2.140:/share -u admin -p passwd -n
encryptpasswd123 -time 14:30 -dom 1 -rp 6 -mb 20
```

AutoBackup system to vFlash SD:

```
racadm systemconfig backup --vFlash -time 10:30 -wom 1 -dow mon -rp 6 -mb 1
```

3.2 Using WS-Man

The `SetBackupSchedule()` method used by the `DCIM_LCService` class is used to configure automatic backup schedule using WSMAN. The profile for the [LC Management Profile](#) contains additional information about this method. The [LC Best Practices Guide](#) provides more information about scripting



this command. A job ID is returned by the command and can be used to query the status of the SetBackupSchedule() command.

3.2.1 Usage Examples

1. Using WINRM client for Windows:

- a. Check whether or not the **Automatic Backup** feature is enabled.

```
winrm get
"cimv2/root/dcim/DCIM_LCEnumeration?InstanceID=LifecycleController.Embedded.1
#LCAttributes.1#AutoBackup" -r:https://10.94.195.40:443/wsman -u:root -
p:calvin -SkipCNcheck -SkipCAcheck -SkipRevocationCheck -encoding:utf-8 -
```

- b. Enable the **Automatic Backup** feature by setting the attribute and configuring a job to update the attribute setting.

```
winrm i SetAttribute http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/root/dcim/DCIM_LCService?SystemCreationClassName=DCIM_ComputerSyst
em+CreationClassName=DCIM_LCService+SystemName=DCIM:ComputerSystem+Name=DCI
M:LCService -u:<USER> -p:<PASSWORD> -r:https://<IDRAC_IP_ADDRESS>/wsman -
SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic
@{AttributeName="Automatic Backup Feature";AttributeValue="Enabled"}
```

```
winrm i CreateConfigJob http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/root/dcim/DCIM_LCService?SystemCreationClassName=DCIM_ComputerSyst
em+CreationClassName=DCIM_LCService+SystemName=DCIM:ComputerSystem+Name=DCI
M:LCService -u:<USER> -p:<PASSWORD> -r:https://<IDRAC_IP_ADDRESS>/wsman -
SkipCNcheck -SkipCAcheck -encoding:utf-8 -a:basic
```

- c. Schedule the automatic backup job.

```
winrm i SetBackupSchedule http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/root/dcim/DCIM_LCService?SystemCreationClassName=DCIM_ComputerSyst
em+CreationClassName=DCIM_LCService+SystemName=DCIM:ComputerSystem+Name=DCI
M:LCService -u:<USER> -p:<PASSWORD> -r:https://<IDRAC_IP_ADDRESS>/wsman -
SkipCNCheck -SkipCACheck -encoding:utf-8 -a:basic -file:autobackup.xml
```

The autobackup.xml file contains the parameters to be passed to the SetBackupSchedule() method in XML format. A sample autobackup.xml file is given here.



```
<p:SetBackupSchedule_INPUT
xmlns:p="http://schemas.dmtf.org/wbem/wscim/1/cim-
schema/2/root/dcim/DCIM_LCService">
<p:ShareType>4</p:ShareType>
<p:ImageName>sushma.img</p:ImageName>
<p:Time>12:56</p:Time>
<p:DayOfMonth>*</p:DayOfMonth>
<p:DayOfWeek>Mon</p:DayOfWeek>
<p:WeekOfMonth>L</p:WeekOfMonth>
<p:Passphrase>dell@123</p:Passphrase>
<p:Repeat>1</p:Repeat>
<p:MaxNumberOfBackupArchives>1</p:MaxNumberOfBackupArchives>
</p:SetBackupSchedule_INPUT>
```



3.3 Using iDRAC GUI

1. Log in to the iDRAC Web GUI by typing the IP address or hostname of the iDRAC in the address bar, and then enter appropriate information. You must have the 'login' and 'server control' privileges.
2. In the left pane, click **iDRAC Settings** → **Server Profile**. Click the **Automatic Backup** tab. Select the **Enable Automatic Backup** option to enable the Automatic Backup feature.
3. Type the details such as file location, file name, and so on.

The screenshot shows the 'Server Profile' configuration page in the iDRAC GUI. The 'Automatic Backup' tab is selected. The 'Enable Automatic Backup' checkbox is currently unchecked. Below this, there are sections for 'File Settings and Security' and 'Network Settings'. The 'File Settings and Security' section includes fields for 'File Location' (with radio buttons for 'Network' and 'vFlash'), 'File Name', 'Backup File Passphrase (optional)', and 'Confirm Passphrase'. The 'Network Settings' section includes fields for 'Number of backup files to preserve (1-50)', 'IP Address', 'Protocol' (set to 'CIFS'), 'Share Name', 'Domain Name', 'User Name', and 'Password'. A 'Test network connection' button is located at the bottom of the network settings section.

4. Type the scheduling information and click **Schedule Backup**.



Backup Window Schedule

Current iDRAC Time Fri Jul 5 16:01:36 2013

Start (24hr format)..... [] : []

Recurrence Pattern


Daily Every [] Days

Weekly

Monthly

5. A job ID is displayed after successfully scheduling a server profile backup job.

System Alert

 RAC0652: Successfully scheduled the AutoBackup job. Status of the scheduled job can be viewed and managed within the Job Queue page. Click Job Queue button to view the status of the update jobs.

[Job Queue](#) [OK](#)

The status of a job can be monitored by clicking **Server** → **Job Queue**.

Properties Attached Media vFlash Service Module **Job Queue**

Job Queue

<input type="checkbox"/>	<input type="checkbox"/>	ID	Job	Status
<input type="checkbox"/>	<input type="checkbox"/>	JID_730586229601	Automatic Backup:Image	Ready For Backup
		Start Time:	Sat, 6 Jul 2013 05:00:00	
		Expiration Time:	Sat, 6 Jul 2013 05:05:00	
		Message:	Not Applicable	

3.3.1 Using Lifecycle Controller

Lifecycle Controller currently does not support configuration of automatic backup server profile settings.



4 Getting Automatic Backup Server Profile Schedule

4.1 Using RACADM

```
racadm systemconfig getbackupscheduler
```

4.2 Using WS-Man

The GetBackupSchedule() method used by the DCIM_LCService class is used to get the automatic backup schedule using WS-Man. The profile for the [LC Management Profile](#) contains additional information about this method. The [LC Best Practices Guide](#) provides more information about scripting this command.

```
winrm i GetBackupSchedule http://schemas.dmtf.org/wbem/wscim/1/cim-  
schema/2/root/dcim/DCIM_LCService?SystemCreationClassName=DCIM_ComputerSystem+CreationClassName=DCIM_LCService+SystemName=DCIM:ComputerSystem+Name=DCIM:LCService -u:<USER> -p:<PASS> -r:https://<IPADDRESS>/wsman -SkipCNCheck -SkipCACHeck -encoding:utf-8 -a:basic
```



4.3 Using iDRAC GUI

1. Log in to the iDRAC Web GUI by typing the IP address or hostname of the iDRAC in a address bar and typing the appropriate information. You must have the 'login' and 'server control' privileges.
2. In the left pane, click **iDRAC Settings** → **Server Profile**. Click the **Automatic Backup** tab. The currently configured settings of automatic backup is displayed.

The screenshot displays the iDRAC Web GUI interface for configuring automatic backup settings. The main heading is "Backup and Export Server Profile". Below this, there are two tabs: "Backup" and "Automatic Backup", with "Automatic Backup" being the active tab. The settings are organized into several sections:

- Enable Automatic Backup:** A checkbox that is currently unchecked.
- File Settings and Security:**
 - File Location:** Radio buttons for "Network" (selected) and "vFlash".
 - File Name:** A text input field.
 - Backup File Passphrase (optional):** A text input field.
 - Confirm Passphrase:** A text input field.
- Network Settings:**
 - Number of backup files to preserve (1-50):** A text input field.
 - IP Address:** A text input field.
 - Protocol:** A dropdown menu currently set to "CIFS".
 - Share Name:** A text input field.
 - Domain Name:** A text input field.
 - User Name:** A text input field.
 - Password:** A text input field.

At the bottom of the form, there is a link labeled "Test network connection".

4.3.1 Using Lifecycle Controller

Lifecycle Controller currently does not support configuration or viewing of automatic backup server profile settings.



5 Clearing Automatic Backup Server Profile Schedule

The automatic scheduling of the backup server profile operation can be disabled and the settings are cleared.

5.1 Using RACADM

```
racadm systemconfig clearbackupscheduler
```

5.2 Using WS-Man

The ClearBackupSchedule() method used by the DCIM_LCService class is used to configure automatic backup schedule using WS-MAN. The profile for the [LC Management Profile](#) contains additional information about this method. The [LC Best Practices Guide](#) provides more information about scripting this command.

```
winrm i ClearBackupSchedule http://schemas.dmtf.org/wbem/wscim/1/cim-  
schema/2/root/dcim/DCIM_LCService?SystemCreationClassName=DCIM_ComputerSystem+Cr  
eationClassName=DCIM_LCService+SystemName=DCIM:ComputerSystem+Name=DCIM:LCSer  
vice -u:<USER> -p:<PASS> -r:https://<IPADDRESS>/wsman -SkipCNCheck -SkipCAGCheck -  
encoding:utf-8 -a:basic
```

5.3 Using iDRAC GUI

1. Log in to the iDRAC Web GUI by typing the IP address or hostname of the iDRAC in a address bar, and then entering the appropriate information. You must have the 'login' and 'server control' privileges.
2. In the left pane, click **iDRAC Settings** → **Server Profile**. Click the **Automatic Backup** tab. Click **Clear Settings**. The existing settings, if any, are cleared and the Automatic Backup Feature is disabled.



Server Profile

Backup and Export | Import

Backup and Export Server Profile

Backup
Automatic Backup

Enable Automatic Backup

File Settings and Security

File Location
 Network
 vFlash

File Name

Backup File Passphrase (optional)

Confirm Passphrase

Network Settings

Number of backup files to preserve (1-50)

IP Address

Protocol CIFS ▼

Share Name

Domain Name

User Name

Password

Test network connection

5.4 Using Lifecycle Controller

Lifecycle Controller currently does not support configuring or viewing of automatic backup server profile settings.

Learn More

For more information about Backup Server Profile, see

[Lifecycle Controller Backup & Restore in Dell PowerEdge 12th Generation Servers](#)

For more information about Dell’s enterprise-class servers of Dell, click Dell.com/PowerEdge.

About the Authors

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