Configuring Remote Wake-Up Using Dell Client Command Suite

Dell Command | Configure
Dell Command | Monitor
Dell Command | PowerShell Provider

Dell Engineering
June 2017

Revisions

Date	Description
June 2017	Initial release

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Executive summary

Remote wake-up refers to turning on a system by sending a network message over a remote connection. You can wake up your system through a remote desktop connection, SSH, FTP, web interface, or any other remote connection that you have set up. This white paper describes the various kinds of remote wake-up solutions or BIOS features available on Dell enterprise systems such as Latitude, Precision and so on. You can configure remote wake-up on one or more systems by using the Dell Client Command Suite of products, namely Dell Command | Configure, Dell Command | Monitor, and Dell Command | PowerShell Provider. In addition, system administrators can configure all wake on features from a Pre-OS environment by using Dell Command Configure & Dell Command PowerShell Provider.

1 Wake on AC

The **wake-on-AC** BIOS feature controls the system's behavior when AC power is restored. This feature is present in desktops as ***AC Recovery*** with the options: 'Power Off', 'Power On', and 'Last Power State', and in notebooks as ***Wake-On-AC*** with the options: 'Enable' and 'Disable'.

After AC power is restored, the desktop briefly powers on to perform basic checks, including how the AC Recovery feature is set. If the feature is set to:

- **Power Off** – The system is powered off.
- **Power On** – The system proceeds to boot.
- **Last Power State** – The system is powered on and then returns to its last state before the AC power was removed. For example, if the system was powered on when a power outage occurred, when AC power is restored, the system powers on automatically.

Note:

- If the desktop is in sleep mode (S3 state) and then loses AC power, the system is considered to be in a powered on state.
- If the notebook (with or without batteries) is shutdown (S4 or S5 state) and has AC power applied, then the Embedded Controller detects the event and powers on or off based on the configured setting.

1.1 Using Dell Command | Configure

Dell Command | Configure provides a single option to configure the **Wake on AC** feature on both desktop and notebooks, namely **acpower** with the following values:

- **on** – To select 'Power On' for desktops and 'Enabled' for notebooks
- **off** – To select 'Power Off' for desktops and 'Disabled' for notebooks
- **last** –To select 'Last Power State' for desktops

1.1.1 Using Command Line

The following figure illustrates the command for setting the **acpower** option as ‘on’.

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --acpower
acpower=off

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --acpower=on
acpower=on

C:\Program Files (x86)\Dell\Command Configure\X86_64>
```

Figure 1 Setting ‘acpower’ as ‘on’

1.1.2 Using Graphical User Interface

To configure the **Wake on AC** BIOS feature, select **acpower** option from the **Power and Performance** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package**.
   - **Create Local System Package**.
   - **Open a Saved Package**.
2. Click **Edit**, or double-click the **acpower** option.
3. In the **acpower** option row, select the appropriate option in the **Value to set** field.
4. Click **OK**.
5. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User’s Guide*.

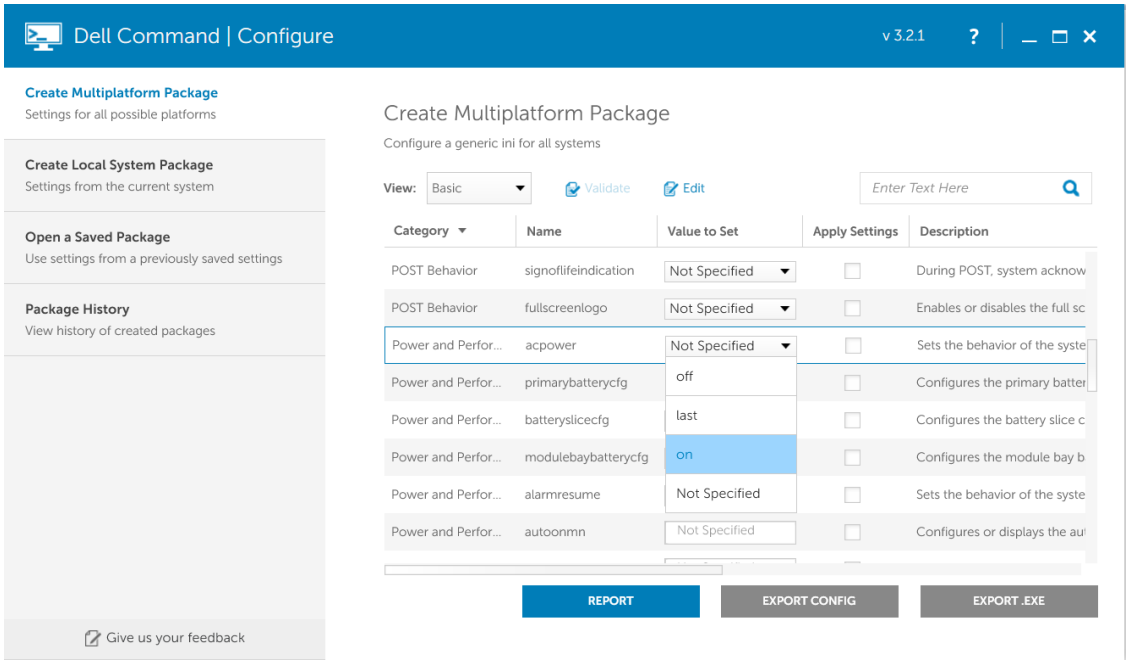

Figure 2 Creating a configuration file for setting ‘acpower’ as ‘on’

1.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the following options for the **Wake on AC** BIOS feature:

- On Desktop – **WakeOnAc** with the values as ‘Disabled’ and ‘Enabled’.
- On Notebook – **AcPwrRcvry** with the values as ‘On’, ‘Off’, and ‘Last’.

```
PS DellSmbios:\PowerManagement> gi .\WakeOnAc

Attribute ShortDesc  CurrentValue
--------- ---------  ------------
WakeOnAc  Wake on AC Disabled


PS DellSmbios:\PowerManagement> si .\WakeOnAc Enabled -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\WakeOnAc Value: Enabled".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement>
```

Figure 3 Setting ‘WakeOnAc’ as ‘Enabled’

1.3 Using Dell Command | Monitor

Dell Command | Monitor provides a single option to configure the **Wake on AC** BIOS feature on both desktop and notebooks, namely **AC Power Recovery Mode** with the values ‘Off’, ‘Last’, and ‘On’.

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {
>> $_.AttributeName -eq "AC Power Recovery Mode"}


Caption                   :
Description               :
ElementName               :
AttributeName             : AC Power Recovery Mode
CurrentValue              : {1}
DefaultValue              :
InstanceID                : Root/MainSystemChassis/BIOSSetupParent/BiosSetupACPRM
IsOrderedList             :
IsReadOnly                : False
PendingValue              :
PossibleValues            : {1, 3}
PossibleValuesDescription : {Off, On}
PSComputerName            :


PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("AC Power Recovery Mode");AttributeValue=@("3")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}


PS C:\>
```

Figure 4 Setting ‘AC Power Recovery Mode’ as ‘On’

2 Auto Power ON

The **Auto-Power-ON** BIOS feature is used to automatically power on a system for selected days/times.

A system which is in shutdown state connected with AC power responds to an RTC alarm based on the system's time/date.

Note: System with battery power does not respond to this alarm.

This feature applies to systems which are either in S4 state (Hibernate) or S5 state (Power Off). The **Auto Power On** feature supports the following values:

- **Disabled** - The system does not wake up at the selected time.
- **Every Day** - The system wakes up every day (Sunday to Saturday) at the selected time.
- **Weekdays** - The system wakes up from Monday to Friday at the selected time.
- **Select Days** -The system wakes up only on selected days at the selected time.

The Auto Power On feature has options to set the hour and minute (am/pm) also. For example – If **Select Days** option is selected for **Auto Power On** with Mondays and Saturdays only enabled and the time set is 6:00am, then system wakes up only on Mondays and Saturdays at 6:00am. If a system is already powered on (including Standby) and the RTC alarm time is configured, then there are no actions performed.

2.1 Using Dell Command | Configure

Dell Command | Configure provides the following options to configure the **Auto Power ON** BIOS feature:

- **Autoonhr** - To set the value of hour which can range from 0 to 23.
- **autoonmn** - To set the value of minute which can range from 0 to 59.
- **autoon** - To set the days. This option has possible values such as 'disable', 'everyday', 'selectdays' and 'weekdays'.

If the user wants to select 'selectdays' as value, particular days must also be given in argument.

To select Mondays and Saturdays as only days when user want to wake up the system, first 'Auto On' value must be selected as 'SelectDays'.

2.1.1 Using Command Line

The following figure illustrates the command for setting the **autoon** option as 'selectdays'.

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --autoon
autoon=disable

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --autoon=selectdays:mon,sat
autoon=selectdays:Mon,Sat
```

Figure 5 Setting 'autoon' as 'selectdays' (Monday and Saturday)

To select time as 11:45PM, the 'AutoOnHr' value should be given as 23 and the 'AutoOnMn' value should be given as 45.

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --autoonhr
autoonhr=0

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --autoonmn
autoonmn=0

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --autoonhr=23
autoonhr=23

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --autoonmn=45
autoonmn=45
```

Figure 6 Setting ‘autoonhr’ as 11pm and ‘autoonmn’ as 45 minutes

2.1.2 Using Graphical User Interface

To configure the days on which you want the system to automatically turn on, using the **autoon** option from the **Power and Performance** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**
   - **Create Local System Package.**
   - **Open a Saved Package.**
2. Click **Edit**, or double-click the **autoon** option.
3. In the **autoon** option row, click View/Change in the **Value to set** column. The auto on screen is displayed.
4. Select one of the options from the Auto On screen.
5. Click **OK**.
6. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

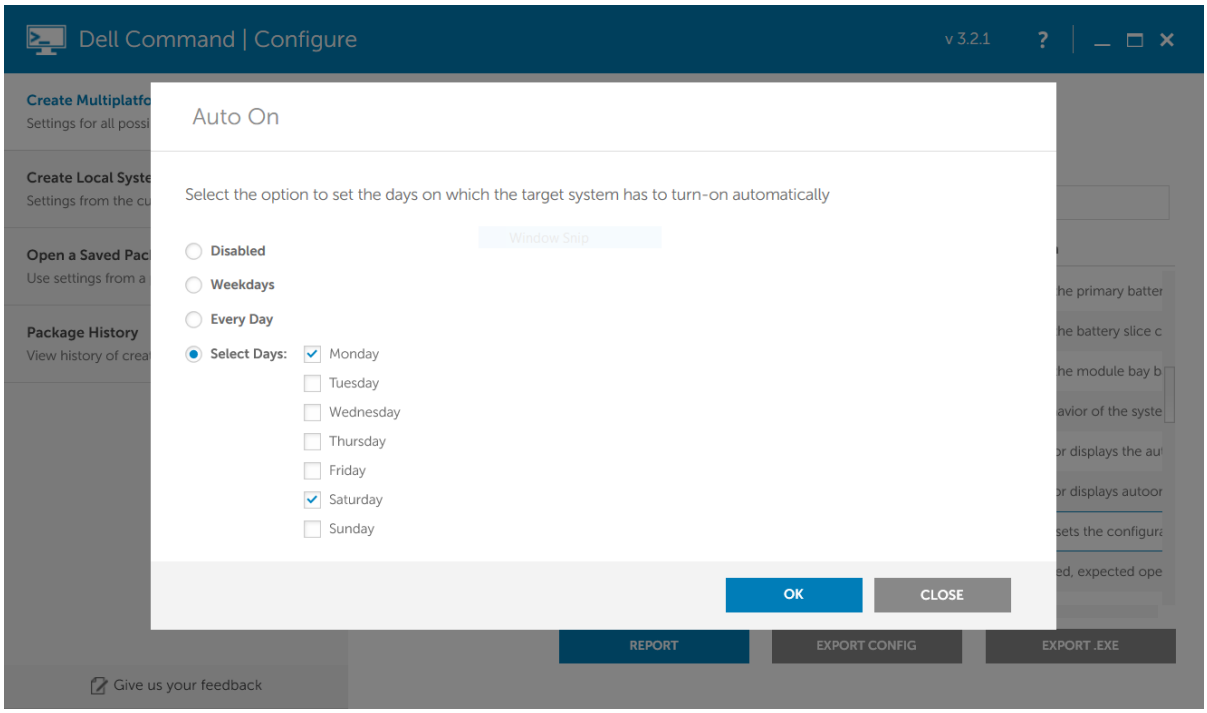

Figure 7 Creating a configuration file for setting 'autoon' as 'selectdays' (Mondays and Saturdays)

To configure the time on which you want the system to automatically turn on using the **autoonhr** and **autoonmn** option from the **Power and Performance** category, perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**
   - **Create Local System Package.**
   - **Open a Saved Package.**
2. Click **Edit**, or double-click the option.
3. In the **autoonmn** and **autoonhr** option rows, enter the value in textbox. If value entered is out of range, then pop is shown with error message.
4. Click **OK**.
5. To apply the modifications, export the configuration in **.ini** or **.exe** format.
6. To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User's Guide*.

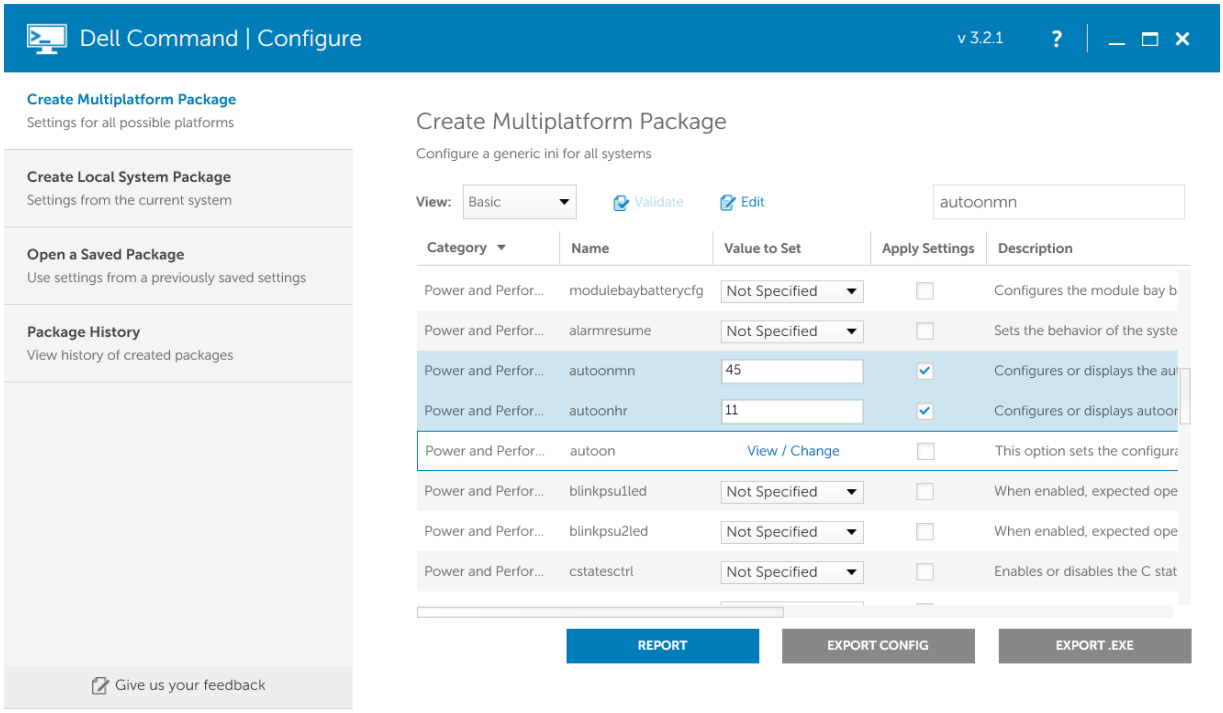

Figure 8 Creating a configuration file for setting ‘autoonhr’ as 11pm and ‘autoonhr’ as 45 minutes

2.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the following options for the **Auto Power ON** BIOS feature.

- **AutoOn** – To select the days with values as ‘Disabled’, ‘Everyday’, ‘Weekdays’, and ‘SelectDays’.
- **AutoOnSun** to **AutoOnSat** – To enable and disable particular day in case ‘AutoOn’ value is chosen as ‘SelectDays’.
- **AutoOnHr** – To set the value of hour which can range from 0 to 23.
- **AutoOnMn** – To set the value of minute which can range from 0 to 59.

To select Mondays and Saturdays as only days when user want to wake the system up, first ‘Auto On’ value must be selected as ‘SelectDays’.

```
PS DellSmbios:\PowerManagement> gi .\AutoOn

Attribute ShortDesc CurrentValue
--------- --------- ------------
AutoOn    Auto On   Disabled


PS DellSmbios:\PowerManagement> si .\AutoOn SelectDays -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\AutoOn Value: SelectDays".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement> si .\AutoOnMon Enabled -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\AutoOnMon Value: Enabled".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement> si .\AutoOnSat Enabled -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\AutoOnSat Value: Enabled".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement>
```

Figure 9 Setting ‘AutoOn’ as ‘SelectDays’, ‘AutoOnMon’ and ‘AutoOnSat’ as ‘Enabled’

To select time as 11:45PM, ‘AutoOnHr’ value should be given as 23 and ‘AutoOnMn’ value should be given as 45.

```
PS DellSmbios:\PowerManagement> gi .\AutoOnHr

Attribute ShortDesc         CurrentValue
--------- ---------         ------------
AutoOnHr  Auto On Hour (HH) 0


PS DellSmbios:\PowerManagement> gi .\AutoOnMn

Attribute ShortDesc           CurrentValue
--------- ---------           ------------
AutoOnMn  Auto On Minute (MM) 0


PS DellSmbios:\PowerManagement> si .\AutoOnHr 23 -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\AutoOnHr Value: 23".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement> si .\AutoOnMn 45 -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\AutoOnMn Value: 45".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement>
```

Figure 10 Setting ‘AutoOnHr’ as 11pm and ‘AutoOnMn’ as 45 minutes

2.3 Using Dell Command | Monitor

Dell Command | Monitor provides the following options for the **Auto Power ON** BIOS feature:

- **Auto On** – To select the days with values as ‘Disable’, ‘Everyday’, ‘Weekdays’, and ‘Select days’.
- **Auto On Sunday** to **Auto On Saturday**– To enable and disable particular day in case ‘Auto On’value is chosen as ‘Select days’.
- **Auto On Hour** – To set the value of hour which can range from 0 to 23.
- **Auto On Minute** – To set the value of minute which can range from 0 to 59.

To select ‘Mondays’ and ‘Saturdays’ as only days when user wants to wake the system up, first ‘Auto On’ value must be selected as ‘Select days’.

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {
>> $_.AttributeName -eq "Auto On"}


Caption                  :
Description              :
ElementName              :
AttributeName            : Auto On
CurrentValue             : {1}
DefaultValue             :
InstanceID               : Root/MainSystemChassis/BIOSSetupParent/BiosSetupAutoOn
IsOrderedList            :
IsReadOnly               : False
PendingValue             :
PossibleValues           : {1, 2, 3, 4}
PossibleValuesDescription : {Disable, Everyday, Weekdays, Select days}
PSComputerName           :



PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("Auto On");AttributeValue=@("4")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}
```

Figure 11 Setting ‘Auto On’ as ‘Select days’

To select time as 11:45PM, ‘Auto On Hour’ value should be given as 23 and ‘Auto On Minute’ value should be given as 45.

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {
>> $_.AttributeName -eq "Auto On Hour"}


Caption                  :
Description              :
ElementName              :
AttributeName            : Auto On Hour
CurrentValue             : {0}
DefaultValue             :
InstanceID               : Root/MainSystemChassis/AutoOnHourObj
IsOrderedList            :
IsReadOnly               : False
PendingValue             :
PossibleValues           : {0}
PossibleValuesDescription : {0-23}
PSComputerName           :



PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("Auto On Hour");AttributeValue=@("23")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}


PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("Auto On Minute");AttributeValue=@("45")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}
```

Figure 12 Setting ‘Auto On Hour’ as 11pm and ‘Auto On Minute’ as 45 minutes

In some cases, the OS (or software in the OS) also sets an RTC timer:

- If graceful shutdown happens, the OS-configured RTC wake time has precedent over the BIOS ‘Auto Power On’ time as the OS RTC timer value gets retained and wakes up the system and the BIOS Auto Power On time should be ignored.
- During ungraceful shutdown events such as AC removal on desktops, or forced shutdown due to power button override, and so on, the BIOS Auto Power On timer can take precedent, as it is expected that the OS timer value would be lost during the reset.

3 Wake on LAN/WLAN

The **Wake on LAN/WLAN** BIOS feature allows a user to wake a system from S4 or S5 state (including dirty shutdown – AC/DC power is removed while system is running the OS) using LAN/LOM/Add-in NIC and/or WLAN.

To wake up the system, a magic packet is sent over the network from another system using target system's MAC address. PING and ARP also can be used.

This feature can be set as -

- **Disabled** - The devices do not wake the system when a wakeup packet is received.
- **LAN Only** - A wakeup packet sent to the LAN/LOM/Add-in NIC to wake the system.
- **WLAN Only** - A wakeup packet sent to the WLAN to wake the system.
- **LAN or WLAN** - A wakeup packet sent to either the LAN/LOM/Add-in NIC or WLAN to wake the system.
- **LAN With PXE Boot** – A wakeup packet sent to the system in either the S4 or S5 state which causes the system to wake-up and immediately boot to PXE. If booting to the PXE server fails, the boot process continues to the next item in the Boot Sequence. There should not be any halting error, if the PXE server is not available.

Note:

- When system is in the Deep Sleep state, **Wake on LAN** functionality is disabled. Click Deep Sleep Control for more information.
- When running on battery, Wake on LAN/WLAN is disabled in order to conserve battery life. The system must be plugged into AC for Wake on LAN/WLAN to detect the wakeup packet.
- When Wireless Switch is set to turn off the radio, Wake on WLAN is not possible. Click Wireless Switch for more information.

There are also OS and NIC driver options, which are not controlled by BIOS to allow/disallow a user to wake the system from S3, S4, and S5 states. For S4, even if BIOS 'Wake on LAN/WLAN' is set to enabled, the OS WOL option must also be enabled, otherwise the system is prevented from WOL. The Intel NIC driver has options for 'Wake on Magic Packet' to control wake from S3.

This **table** summarizes the behavior of **Wake on LAN** when system is in different power states and also other wake on options controlled by OS and NIC driver.

When Deep Sleep Control is disabled –

Table 1 Behavior of Wake on LAN when Deep Sleep Control is disabled

Power State	Deep Sleep Control	BIOS Wake on LAN	Driver Wake on LAN	Wake on LAN Result
S3	Disabled	Enabled	Enabled	Yes
S3 (Hybrid)				Yes
S4				Yes
S5				Yes
S3			Disabled	No
S3 (Hybrid)				No
S4				No
S5				Yes
S3		Disabled	Enabled	Yes
S3 (Hybrid)				Yes
S4				No
S5				No
S3			Disabled	No
S3 (Hybrid)				No
S4				No
S5				No

When Deep Sleep Control is enabled in S5 only –

Table 2 Behavior of Wake on LAN when Deep Sleep Control is enabled in S5 only

Power State	Deep Sleep Control	BIOS Wake on LAN	Driver Wake on LAN	Wake on LAN Result
S3	Enabled in S5 only	Enabled	Enabled	Yes
S3 (Hybrid)				Yes
S4				Yes
S5				No
S3			Disabled	No
S3 (Hybrid)				No
S4				No
S5				No
S3		Disabled	Enabled	Yes
S3 (Hybrid)				Yes
S4				No
S5				No
S3			Disabled	No
S3 (Hybrid)				No
S4				No
S5				No

When Deep Sleep Control is enabled in S4 and S5 –

Table 3 Behavior of Wake on LAN when Deep Sleep Control is enabled in and S4 and S5

Power State	Deep Sleep Control	BIOS Wake on LAN	Driver Wake on LAN	Wake on LAN Result
S3	Enabled in S4 and S5	Enabled	Enabled	Yes
S3 (Hybrid)				Yes
S4				No
S5				No
S3			Disabled	No
S3 (Hybrid)				No
S4				No
S5				No
S3		Disabled	Enabled	Yes
S3 (Hybrid)				Yes
S4				No
S5				No
S3			Disabled	No
S3 (Hybrid)				No
S4				No
S5				No

3.1 Using Dell Command | Configure

Dell Command | Configure provides **wakeonlan** option to configure this feature and supports the following values:

- **disable** – To disable the 'Wake on LAN/WLAN' feature.
- **enable** – To select the 'LAN Only' bios value.
- **enablewakeonwlan** – To select the 'WLAN Only' bios value
- **lanorwlan** – to select the 'LAN or WLAN' bios value
- **lanwithpxeboot** – to select 'LAN With PXE Boot' bios value

3.1.1 Using Command Line

The following figure illustrates the command for setting the wakeonlan option as lanorwlan.

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --wakeonlan
wakeonlan=disable

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --wakeonlan=lanorwlan
wakeonlan=lanorwlan
```

Figure 13 Setting ‘wakeonlan’ as ‘lanorwlan’

3.1.2 Using Graphical User Interface

To configure the **Wake on LAN** feature, select **wakeonlan** option from the **Power and Performance** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**
   - **Create Local System Package**.
   - **Open a Saved Package.**
2. Click Edit, or double-click the **wakeonlan** option.
3. In the **wakeonlan** option row, select the appropriate option in the **Value to Set** field.
4. Click **OK**.
5. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User’s Guide*.

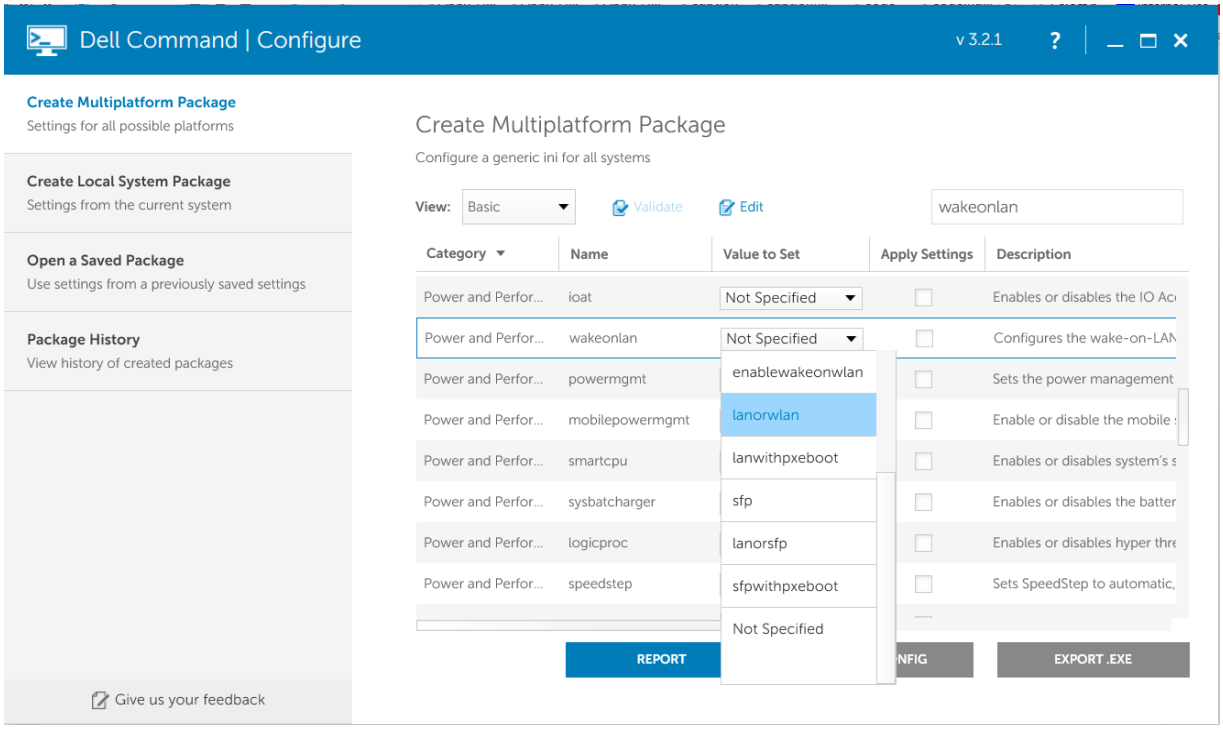

Figure 14 Creating a configuration file for setting ‘wakeonlan’ as ‘lanorwlan’

3.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the **WakeonLan** option to configure this feature and supports the following values:

- **Disabled** – To disable the ‘Wake on LAN/WLAN’ feature
- **LanOnly** – To select the ‘LAN Only’ bios value
- **WlanOnly** – To select the ‘WLAN Only’ bios value
- **LanWlan** – To select the ‘LAN or WLAN’ bios value
- **LanWithPxeBoot** – To select ‘LAN With PXE Boot’ bios value

```
PS DellSmbios:\PowerManagement> gi .\WakeOnLan

Attribute ShortDesc   CurrentValue
--------- ---------   ------------
WakeOnLan Wake on LAN Disabled


PS DellSmbios:\PowerManagement> si .\WakeOnLan LanOnly -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\WakeOnLan Value: LanOnly".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement>
```

Figure 15 Setting ‘WakeOnLan’ as ‘LanOnly’

3.3 Using Dell Command | Monitor

Dell Command | Monitor provides the **Wake-On-LAN** option to configure this feature and supports the following values:

- **Disabled** – To disable the ‘Wake on LAN/WLAN’ feature
- **LanOnly** – To select the ‘LAN Only’ bios value
- **WlanOnly** – To select the ‘WLAN Only’ bios value
- **LanWlan** – To select the ‘LAN or WLAN’ bios value
- **LanWithPxeBoot** – To select ‘LAN With PXE Boot’ bios value

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {
>> $_.AttributeName -eq "Wake-On-LAN"}


Caption                   :
Description               :
ElementName               :
AttributeName             : Wake-On-LAN
CurrentValue              : {1}
DefaultValue              :
InstanceID                : Root/MainSystemChassis/BIOSSetupParent/WolcEnuBsetpObj
IsOrderedList             :
IsReadOnly                : False
PendingValue              :
PossibleValues            : {1, 4, 5, 6}
PossibleValuesDescription : {Disable, LAN, LAN or WLAN, WLAN only}
PSComputerName            :



PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("Wake-On-LAN");AttributeValue=@("5")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}
```

Figure 16 Setting ‘Wake-On-Lan’ as ‘LAN or WLAN’

4 USB Wake

The **USB Wake Support** BIOS feature allows USB device to wake the system from S3 state. When,

- **Enabled** – USB devices such as USB mouse, USB keyboard, or touchscreen can wake the system from S3.When enabled, power is supplied to USB ports during the S3 state.
- **Disabled** – USB devices cannot wake the system from the S3 state.

Note:

- USB Wake Support does not function for the systems that operate on battery power, even if the USB devices are externally powered. The determining factor is whether the system's USB ports are powered and able to detect USB traffic.
- For USB Wake to work, the USB ports must not be in Deep Sleep. If Deep Sleep Control is:
  - **Disabled** – All USB ports can wake up the system from S3, but only the system's Smart Power on Connector port can wake up the system from S4 and S5.
  - **Enabled in S5 only** – All ports can wake up the system from S3, but only the system's Smart Power on Connector port can wake up the system form S4. No wake support for S5.
  - **Enabled in S4 and S5** – All ports can wake up the system from S3. Wake from S4 and S5 is disabled in this case.

4.1 Using Dell Command | Configure

Dell Command | Configure provides **usbwake** option to configure this feature having values as 'enable' and 'disable'.

4.1.1 Using Command Line

The following figure illustrates the command for setting the **usbwake** option as 'enable'.

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --usbwake
usbwake=disable

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --usbwake=enable
usbwake=enable
```

Figure 17 Setting 'usbwake' as 'enable'

4.1.2 Using Graphical User Interface

To configure this feature, select **usbwake** option from the **Power and Performance** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**
   - **Create Local System Package.**
   - **Open a Saved Package.**
2. Click **Edit**, or double-click the **usbwake** option.
3. In the **usbwake** option row, select the appropriate option in the **Value to Set** field.
4. Click **OK**.
5. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User's Guide*.

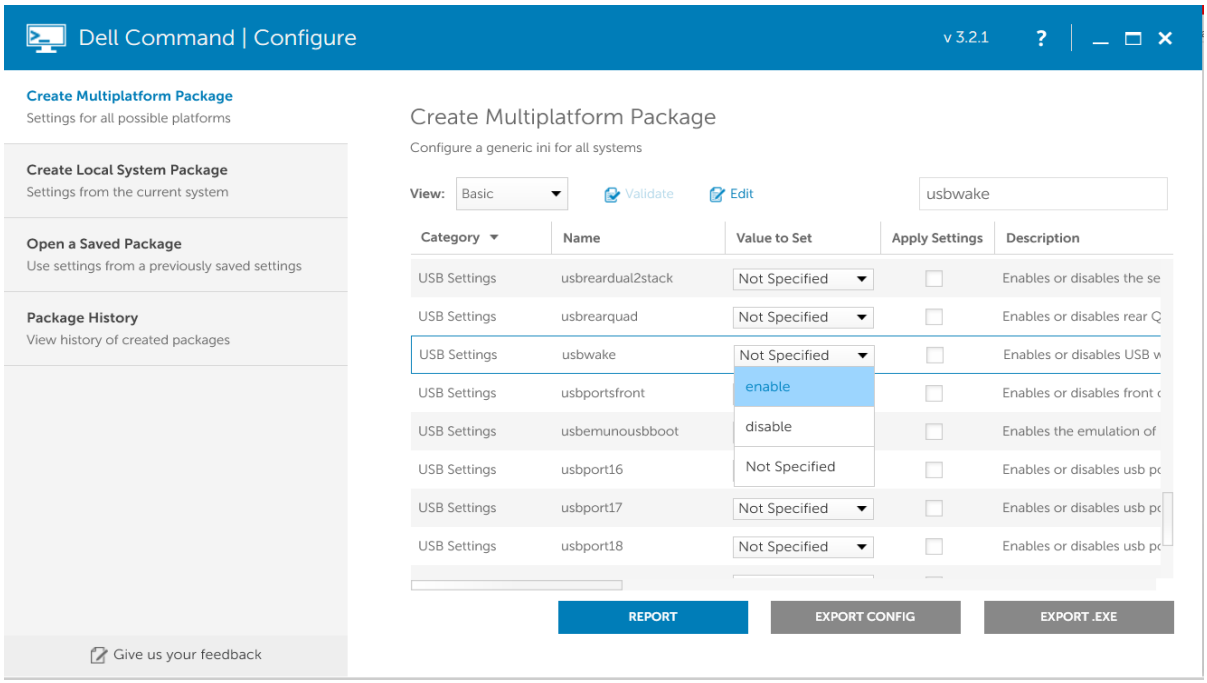

Figure 18 Creating a configuration file for setting 'usbwake' as 'enable'

4.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the **UsbWake** option to configure the **USB Wake** BIOS feature having values as 'Enabled' and 'Disabled'.

```
PS DellSmbios:\PowerManagement> gi .\UsbWake

Attribute ShortDesc               CurrentValue
--------- ---------               ------------
UsbWake   Enable USB Wake Support Disabled


PS DellSmbios:\PowerManagement> si .\UsbWake Enabled -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\UsbWake Value: Enabled".
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement>
```

Figure 19 Setting ‘UsbWake’ as ‘Enabled’

4.3 Using Dell Command | Monitor

Dell Command | Monitor provides the **USB Wake Support** option to configure this feature.

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {
>> $_.AttributeName -eq "USB Wake Support"}


Caption                  :
Description              :
ElementName              :
AttributeName            : USB Wake Support
CurrentValue             : {1}
DefaultValue             :
InstanceID               : Root/MainSystemChassis/BIOSSetupParent/BiosSetupUSBWake
IsOrderedList            :
IsReadOnly               : False
PendingValue             :
PossibleValues           : {1, 2}
PossibleValuesDescription : {Disable, Enable}
PSComputerName           :



PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("USB Wake Support");AttributeValue=@("2")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}
```

Figure 20 Setting ‘USB Wake Support’ as ‘Enable’

5 Wake on Dock

The Wake-on-Dock BIOS feature enables or disables waking the system when a docking connection is made.

5.1 Using Dell Command | Configure

Dell Command | Configure provides **wakeondock** option to configure the **Wake On Dock** BIOS feature having values as ‘enable’ and ‘disable’.

5.1.1 Using Command Line

The following figure illustrates the command for setting the **wakeondock** option as ‘enable’.

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --wakeondock
wakeondock=disable

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --wakeondock=enable
wakeondock=enable
```

Figure 21 Setting ‘wakeondock’ as ‘enable’

5.1.2 Using Graphical User Interface

To configure the **USB Wake** feature, select the **wakeondock** option from the **Power and Performance** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**
   - **Create Local System Package.**
   - **Open a Saved Package**.
2. Click **Edit**, or double-click the **wakeondock** option.
3. In the **wakeondock** option row, select the appropriate option in the **Value to Set** column.
4. Click **OK**.
5. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User’s Guide*.

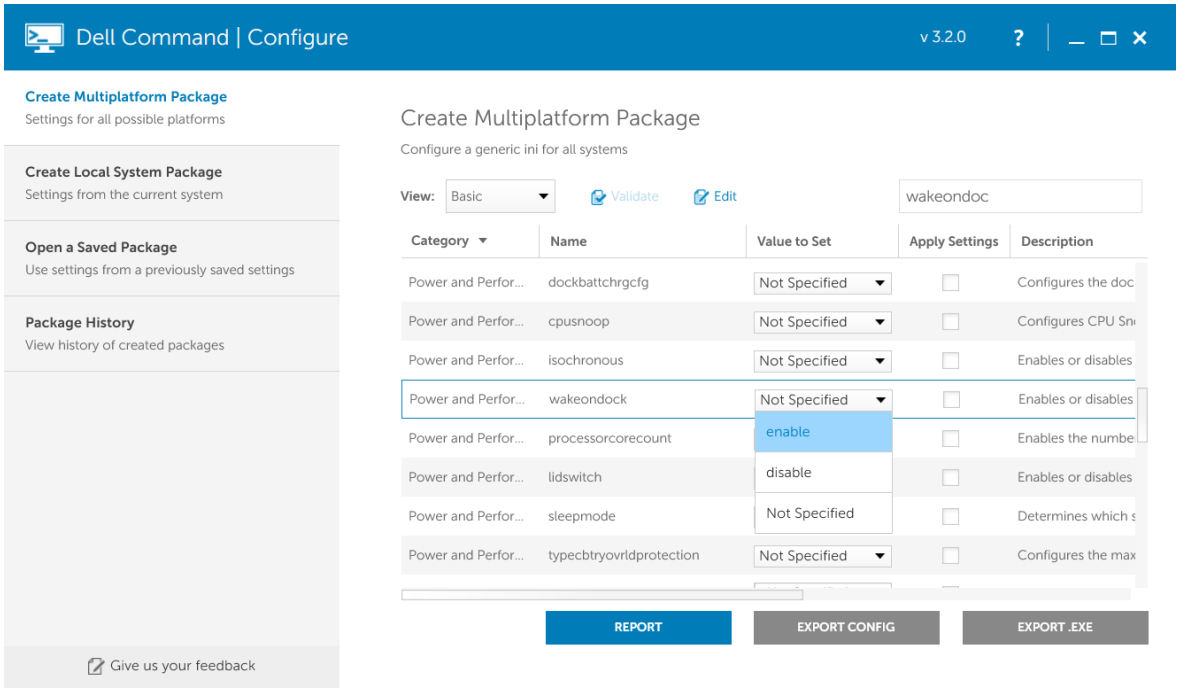

Figure 22 Creating a configuration file for setting ‘wakeondock’ as ‘enable’

5.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the **WakeOnDock** option to configure the **Wake On Dock** BIOS feature having values as ‘Enabled’ and ‘Disabled’.

```
PS DellSmbios:\PowerManagement> gi .\WakeOnDock

Attribute  ShortDesc              CurrentValue
---------  ---------              ------------
WakeOnDock Wake on Dell USB-C Dock Disabled


PS DellSmbios:\PowerManagement> si .\WakeOnDock Enabled -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\WakeOnDock Value: Enabled".
VERBOSE: Value being Set Using PLDM Interface
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement>
```

Figure 23 Setting ‘WakeOnDock’ as ‘Enabled’

5.3 Using Dell Command | Monitor

Dell Command | Monitor provides the **Wake on Dock** option to configure the **Wake On Dock** BIOS feature.

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {
>> $_.AttributeName -eq "Wake On Dock"}


Caption                  :
Description              :
ElementName              :
AttributeName            : Wake on Dock
CurrentValue             : {2}
DefaultValue             :
InstanceID               : Root/MainSystemChassis/BIOSSetupParent/WakeonDockCfgObj
IsOrderedList            :
IsReadOnly               : False
PendingValue             :
PossibleValues           : {1, 2}
PossibleValuesDescription : {Enable, Disable}
PSComputerName           :



PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("Wake on Dock");AttributeValue=@("1")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}
```

Figure 24 Setting ‘Wake On Dock’ as ‘Enable’

6 Deep Sleep Control

The **Deep Sleep Control** BIOS feature allows devices such as the system's LAN on Motherboard or LOM and USB controllers to enter a special low power mode when system is in S4 or S5 state. It turns off most of the power-consuming circuitry as required and may disable things such as Power Management Event, USB Power and so on. When the system is in the Deep Sleep state, the Wake-on-LAN and Wake-from-USB functionalities are disabled.

This feature supports the following values:

- **Disabled** – The system's LOM and USB ports do not enter this lower power state.
- **Enable in S5 only** – The system's LOM and USB controllers are in Deep Sleep only upon entering S5.
- **Enable in S4 and S5** – the system's LOM and USB controllers are in Deep Sleep (lowest power off mode) upon entering S4 or S5.

6.1 Using Dell Command | Configure

Dell Command | Configure provides **deepsleepctrl** option to configure the **Deep Sleep Control** feature having values as 'disable', 's5only', and 's4ands5'.

6.1.1 Using Command Line

The following figure illustrates the command for setting the **deepsleepctrl** option as 's5only'

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk --deepsleepctrl
deepsleepctrl=disable

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk --deepsleepctrl=s5only
deepsleepctrl=s5only
```

Figure 25 Setting 'deepsleepctrl' as 's5only'

6.1.2 Using Graphical User Interface

To configure the **Deep Sleep Control** feature, select the **deepsleepctrl** option from the **Power and Performance** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**

- **Create Local System Package.**
- **Open a Saved Package.**

2. Click **Edit**, or double-click the **deepsleepctrl** option.
3. In the **deepsleepctrl** option row, select the appropriate option in the **Value to Set** field.
4. Click **OK**.
5. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User's Guide*.

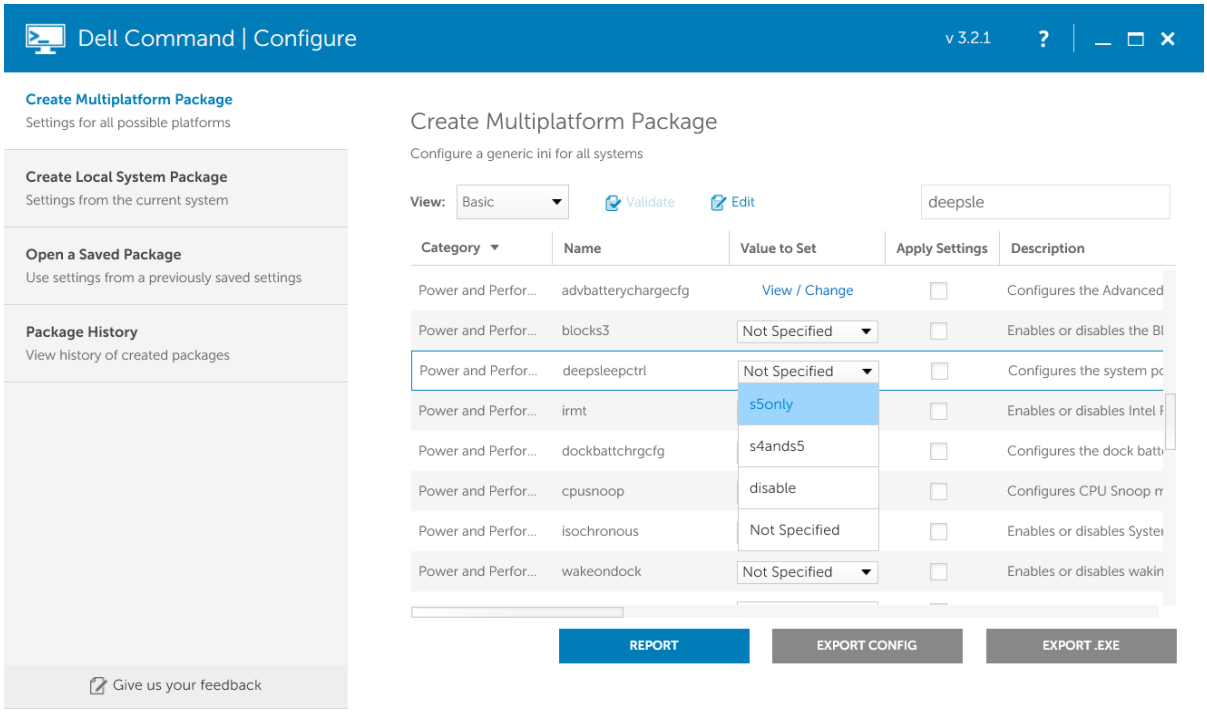

Figure 26 Creating a configuration file for setting 'deepsleepctrl' as 's5only'

6.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the **DeepSleepCtrl** option to configure the **Deep Sleep Control** BIOS feature having the values as 'Disabled', 'S5Only', and 'S4AndS5'.

```
PS DellSmbios:\PowerManagement> gi .\DeepSleepCtrl

Attribute     ShortDesc  CurrentValue
---------     ---------  ------------
DeepSleepCtrl Deep Sleep Disabled


PS DellSmbios:\PowerManagement> si .\DeepSleepCtrl S5Only -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\PowerManagement\DeepSleepCtrl Value: S5Only".
VERBOSE: Value being Set Using PLDM Interface
VERBOSE: SUCCESS.
PS DellSmbios:\PowerManagement>
```

Figure 27 Setting 'DeepSleepCtrl' as 'S5Only'

6.3 Using Dell Command | Monitor

Dell Command | PowerShell Provider provides **Deep Sleep Control** option to configure the **Deep Sleep Control** feature having the values as ‘Disable’, ‘S5Only’, and ‘S4andS5’.

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {$_.AttributeName -eq
 "Deep Sleep Control"}


Caption                   :
Description               :
ElementName               :
AttributeName             : Deep Sleep Control
CurrentValue              : {2}
DefaultValue              :
InstanceID                : Root/MainSystemChassis/BIOSSetupParent/BiosSetupDeepSleepCtrl
IsOrderedList             :
IsReadOnly                : False
PendingValue              :
PossibleValues            : {1, 2, 3}
PossibleValuesDescription : {S4andS5, Disable, S5Only}
PSComputerName            :



PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAt
tributes -Arguments @{AttributeName=@("Deep Sleep Control");AttributeValue=@("3")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}
```

Figure 28 Setting ‘Deep Sleep Control’ as ‘S5Only’

7 Wireless Switch

The Wireless Switch BIOS feature provides facility of enabling or disabling individual wireless radios by toggling the Fn+PrintScreen/Wireless Switch.

This feature can individually enable/disable WWAN, WLAN, WLAN/WiGig, GPS (on WWAN Module), and/or Bluetooth. For example: WLAN is enabled and WWAN and Bluetooth are disabled, if you physically move the Wireless Switch to OFF mode, then only WLAN is turned off.

Note - This feature only works on Operating Systems prior to Windows 8. Beginning with Windows 8, the Wireless Switch toggles the 'Airplane Mode' either in the ON or OFF mode.

Individual radio control is handled in the OS at PC Settings => Network => Airplane Mode.

7.1 Using Dell Command | Configure

Dell Command | Configure provides following options to configure the **Wireless Switch** feature:

- For WLAN – wirelesswitchnlanctrl
- For WWAN – wirelesswitchcellularctrl
- For WLAN/Wigig – wswitchwlanwigigctrl
- For GPS (on WWAN Module) – wswitchgpsonwwanradio
- For Bluetooth – wirelesswitchbluetoothctrl

7.1.1 Using Command Line

The following figure illustrates the command for setting the 'wirelesswitchbluetoothctrl' option as 'disable'

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --wirelesswitchbluetoothctrl
wirelesswitchbluetoothctrl=enable

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --wirelesswitchbluetoothctrl=disable
wirelesswitchbluetoothctrl=disable
```

Figure 29 Setting 'wirelesswitchbluetoothctrl' as 'disable'

7.1.2 Using Graphical User Interface

To configure the Bluetooth feature enablement based on Wireless Switch toggling, select **wirelesswitchbluetoothctrl** option from the **Wireless** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**
   - **Create Local System Package.**
   - **Open a Saved Package.**
2. Click **Edit**, or double-click the **wirelesswitchbluetoothctrl** option.
3. In the **wirelesswitchbluetoothctrl** option row, select the appropriate option in the **Value to Set** field.
4. Click **OK**.
5. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User's Guide*.

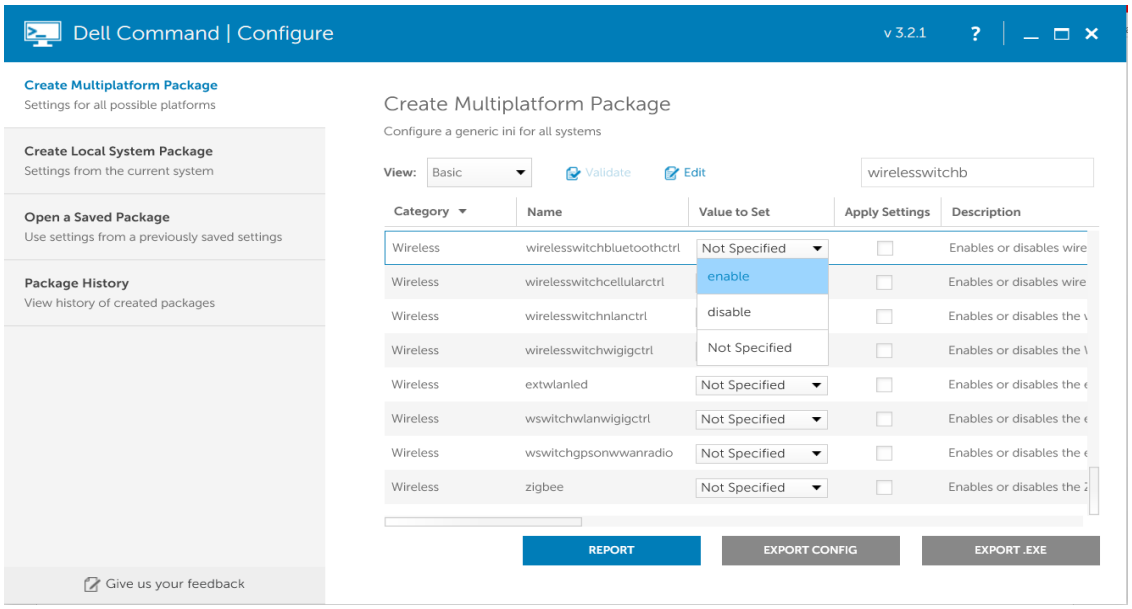

Figure 30 Creating a configuration file for setting 'wirelesswitchbluetoothctrl' as 'disable'

7.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the following options to configure the **Wireless Switch** BIOS feature:

- For WLAN – WirelessSwitchWlanOnlyCtrl
- For WWAN – WirelessSwitchCellularCtrl
- For WLAN/Wigig – WirelessSwitchWlanCtrl
- For GPS (on WWAN Module) – WirelessSwitchGps
- For Bluetooth – WirelessSwitchBluetoothCtrl

```
PS DellSmbios:\Wireless> gi .\WirelessSwitchBluetoothCtrl

Attribute                   ShortDesc              CurrentValue
---------                   ---------              ------------
WirelessSwitchBluetoothCtrl Enable Bluetooth Switch Disabled


PS DellSmbios:\Wireless> si .\WirelessSwitchBluetoothCtrl Enabled -Verbose
VERBOSE: Performing the operation Set-Item on target "Name: DellBIOS:\Wireless\WirelessSwitchBluetoothCtrl Value:
Enabled".
VERBOSE: SUCCESS.
PS DellSmbios:\Wireless>
```

Figure 31 Setting ‘WirelessSwitchBluetoothCtrl’ as ‘Enabled’

7.3 Using Dell Command | Monitor

Dell Command | Monitor provides the following options to configure the **Wireless Switch** BIOS feature:

- For WLAN – Wireless Switch Wireless LAN Control
- For WWAN – Wireless Switch Cellular Control
- For WLAN/WiGig – Wireless Switch WLAN-WIGIG Control
- For GPS (on WWAN Module) – Wireless Switch GPS On WWAN Radio
- For Bluetooth – Wireless Switch Bluetooth Control

```
PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSEnumeration | Where-Object {
>> $_.AttributeName -eq "Wireless Switch GPS On WWAN Radio"}


Caption                 :
Description             :
ElementName             :
AttributeName           : Wireless Switch GPS On WWAN Radio
CurrentValue            : {2}
DefaultValue            :
InstanceID              : Root/MainSystemChassis/BIOSSetupParent/WirelessSwitchGPSOnWWANRadioCfgObj
IsOrderedList           :
IsReadOnly              : False
PendingValue            :
PossibleValues          : {1, 2}
PossibleValuesDescription : {Enable, Disable}
PSComputerName          :


PS C:\> Get-CimInstance -Namespace root\dcim\sysman -ClassName DCIM_BIOSService | Invoke-CimMethod -MethodName SetBIOSAttributes -Arguments @{
>> AttributeName=@("Wireless Switch GPS On WWAN Radio");AttributeValue=@("1")}

ReturnValue SetResult PSComputerName
----------- --------- --------------
          0 {0}
```

Figure 32 Setting ‘Wireless Switch GPS On WWAN Radio’ as ‘Enable’

8 Block Sleep

Dell business systems provide BIOS feature named as Block Sleep which stops the user's system to enter into Sleep State or S3 state in the OS environment, if enabled.

When set to 'Enabled', the 'Sleep' option does not show up in the OS, and the Hibernate (S4) and the Shutdown (S5) are the only low-power States available. Enabling this feature also force pre-boot authentication on non-S3 resumes. The default value for this feature is 'Disabled'.

8.1 Using Dell Command | Configure

Dell Command | Configure provides **blocks3** option to configure the **Block Sleep** BIOS feature having the values as 'enable' and 'disable'.

8.1.1 Using Command Line

The following figure illustrates the command for setting the 'blocks3' option as 'enable'

```
C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --blocks3
blocks3=disable

C:\Program Files (x86)\Dell\Command Configure\X86_64>cctk.exe --blocks3=enable
blocks3=enable

C:\Program Files (x86)\Dell\Command Configure\X86_64>
```

Figure 33 Setting 'blocks3' as 'enable'

8.1.2 Using Graphical User Interface

To configure the Block Sleep BIOS feature, select **blocks3** option from the **Power and Performance** category, then perform the following:

1. Click the required option:
   - **Create Multiplatform Package.**
   - **Create Local System Package.**
   - **Open a Saved Package.**
2. Click **Edit**, or double-click the **blocks3** option.
3. In the **blocks3** option row, select the appropriate option in the **Value to Set** field.
4. Click **OK**.

5. To apply the modifications, export the configuration in a **.ini** or **.exe** format.

To see how to export the configuration and apply it on target systems, go to the Dell Command | Configure wiki page, click the **Documentation** link and see the *Dell Command | Configure User's Guide*.

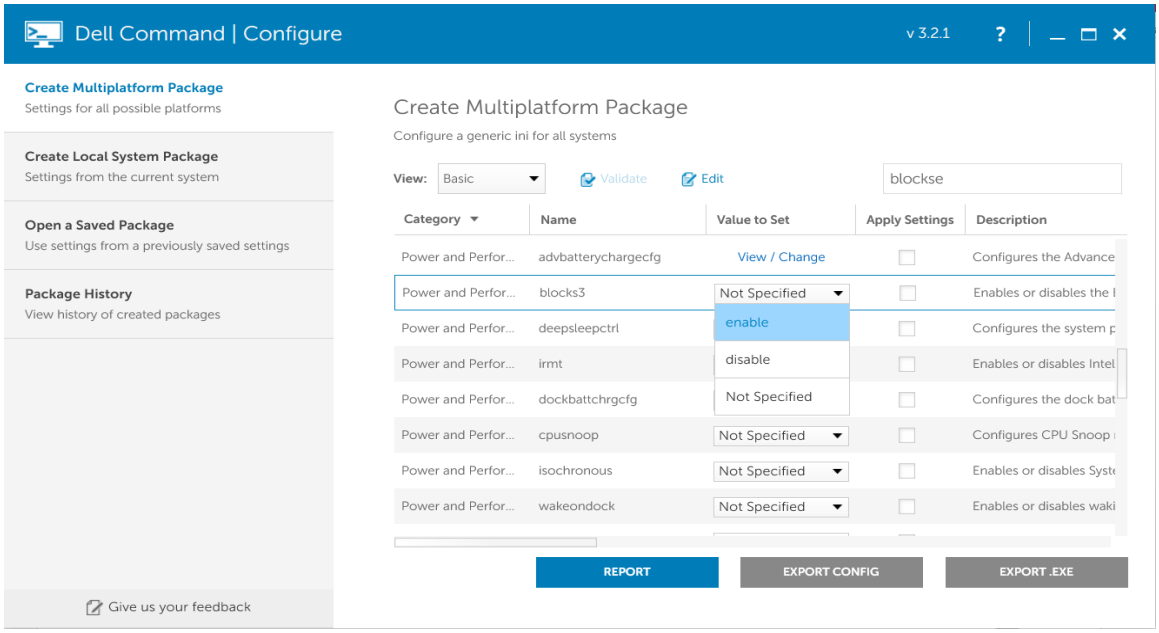

Figure 34 Creating a configuration file for setting 'blocks3' as 'enable'

8.2 Using Dell Command | PowerShell Provider

Dell Command | PowerShell Provider provides the **BlockSleep** option to configure the **Block Sleep** BIOS feature having values as 'enable' and 'disable'.

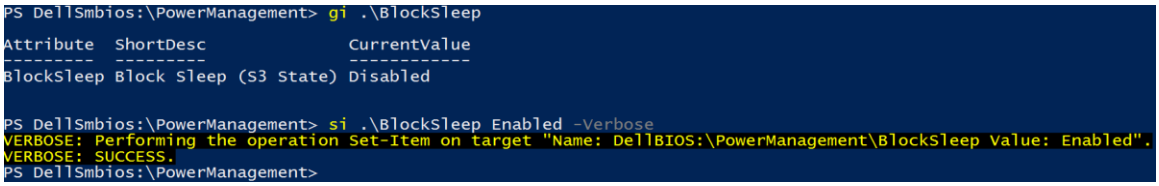

Figure 35 Setting 'BlockSleep' as 'Enabled'

8.3 Using Dell Command | Monitor

Dell Command | Monitor provides **BlockS3** option to configure the **Block Sleep** BIOS feature having values as 'enable' and 'disable'.

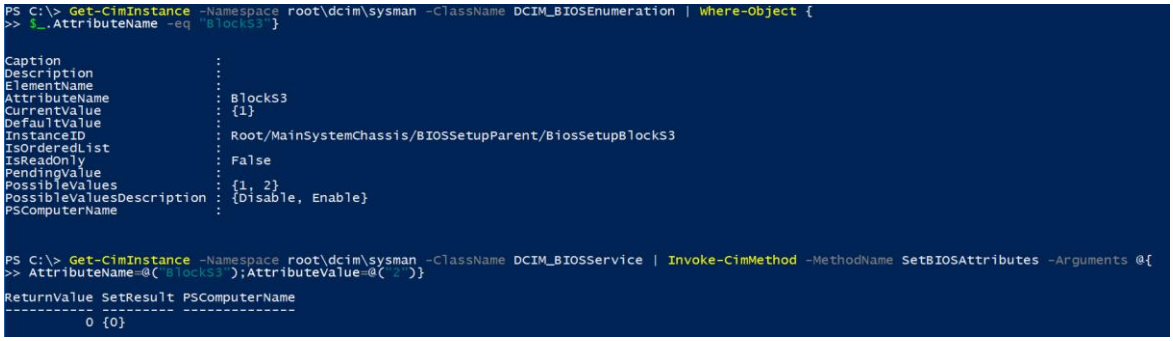

Figure 36 Setting ‘BlockS3’ as ‘Enable’

9 Additional Resources

Dell Command | Configure on Dell Tech Center: You can find all related documents, white papers, blogs and videos at http://en.community.dell.com/techcenter/enterprise-client/w/wiki/7532.dell-command-configure

Dell Command | PowerShell Provider on Dell Tech Center: You can find all related documents, white papers, blogs and videos at http://en.community.dell.com/techcenter/enterprise-client/w/wiki/6901.dell-command-powershell-provider

Dell Command | Monitor on Dell Tech Center: You can find all related documents, white papers, blogs and videos at http://en.community.dell.com/techcenter/enterprise-client/w/wiki/7531.dell-command-monitor