ThinkVantage

Power Manager Deployment Guide

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Contents

Preface

This guide is intended for IT administrators, or those who are responsible for deploying the Power Manager program (hearafter refer to as Power Manager) to computers in their organization. The purpose of this guide is to provide the information required for installing Power Manager on one or more computers, and the information about the common administration tasks associated with managing Active Directory®. Implementing and enforcing a power management strategy on the computers throughout the entire organization can provide substantial savings.

ThinkVantage® Technologies are developed for IT professionals, addressing the unique challenges they may encounter. This deployment guide will provide instructions and solutions for working with Power Manager. If you have suggestions or comments, communicate with your Lenovo® authorized representative. To learn more about the technologies that can help you lower the total cost of ownership and to check for periodic updates to this guide, go to the following Web site:
http://www.lenovo.com/thinkvantage

Chapter 1. Overview

Power Manager helps users adjust power settings to achieve the best balance between system performance and power saving through slider control or power plans.

Power Manager provides a variety of power-saving features through two essential modes, Basic and Advanced. Basic mode is set as default when users open Power Manager for the first time. Users can specify the level of power saving by simply using the slider, without power plans. Advanced mode enables users to configure power plans and the full range of functions in Power Manager to meet specific power saving needs. Power Manager can also display the battery information, and help users monitor the battery status.

Power Management on a computer can save energy and money. When the IT administrator enforces power management strategy on computers throughout the entire organization, the savings can be far more substantial. Power Manager is configured by default to use its energy efficiency features. Power Manager also gives the IT administrator numerous options for tailoring power management settings to optimize energy efficiency throughout their organizations.

Note: Power Manager has two different versions. One is for Windows XP operating systems and the other is for Windows Vista and Windows 7 operating systems. In the Windows Vista and Windows 7 version, the term ″power plan″ is used. In the Windows XP version, the term ″power scheme″ is used. In this document, no distinction will be made and the term ″power plan″ will be used to cover both.

Features

Power Manager includes the following functions:

- **Balance the performance and power saving of the computer**

  Power Manager provides the slider to help users quickly and easily set the level of power to be used. Users can control the Central Processing Unit (CPU) speed and the brightness of the computer display by moving the slider. Moving the slider to the left, toward **Maximum Performance**, increases the CPU speed and the brightness of the computer display but uses more battery power. Moving the slider to the right, toward **Maximum Battery Life**, prolongs the battery life while limiting the CPU speed and the brightness of the computer display.

  When users move the slider to the leftmost position, the power-saving settings in the predefined **Maximum Performance** power plan are applied. When users move the slider to the rightmost position, the power-saving settings in the predefined **Maximum Battery Life** power plan are applied.

- **View, create, delete, and switch power plans**

  A power plan is a collection of hardware and system settings that manages how the computer is used and conserves power. Power Manager power plans provide more power-saving settings than Windows® power plans. On the **Power Plan** tab, the user can view specific settings in any of the predefined power plans: Maximum Performance, Timers off (Presentation), Video Playback, Maximum Battery Life, Energy Star (which is called as ThinkPad® Default on some systems), and Power Source Optimized. These predefined power plans are

designed to meet the needs of most people. If the predefined power plans do not meet your needs, the Create Power Plan wizard can help you create your own custom power plans. You can easily switch between power plans by clicking the **Battery Gauge** icon on the taskbar and using the slider to apply a predefined power plan, or by pressing the F3+Fn keys to select a power plan from the **Choose Power Plan** menu.

- **View battery information**

  Power Manager displays battery information and general battery status, such as remaining time, remaining capacity, charge and discharge status, cycle count and so on. The battery health indicator can indicate the battery health conditions in three colors: green (in good condition), yellow (in fair condition), and red (in poor condition). When the battery has encountered an error, an error message or balloon message will display in the notification area.

- **Maximize battery life span**

  If you primarily use the computer with an attached ac power adapter and only infrequently use battery power, you can increase the life span of the battery by changing the charge thresholds. This allows you to reduce the number of charge cycles by letting the battery discharge to a lower percentage before it begins to charge. You can change the battery charge thresholds on the **Battery** tab.

  You can also set the maximum charge value to below 100%. This option is useful to prolong the life span of the batteries that you do not use frequently, because it is recommended to store batteries with less charge rather than full charge.

- **Remotely configure Power Manager and deploy power plan**

  Power Manager enables an IT administrator to configure Power Manager and deploy a power plan using Active Directory. The IT administrator can select an active power plan in the client computers, inhibit the user's ability to switch between power plans, select a specific power plan, or create a power plan. For example, the IT administrator can disable the **Maximum Performance** power plan and users cannot select it.

  Also, the IT administrator can configure settings for the General Setting policies, Power Plan (Scheme) Deployments policies, Global Power Settings policies, and Battery Maintenance policy.

Chapter 2. Installation

The following instructions provide installation procedures for Power Manager.

.Net Framework dependence

Power Manager requires Microsoft® .NET Framework 3.0 or later. You need to install the .NET Framework before installing Power Manager. You can download a compatible version of the .NET Framework from the following Microsoft Web site: http://msdn.microsoft.com/en-us/netframework/default.aspx

Note: To use Power Manager in Windows 2000 operating systems, install Power Manager version 1.48.

Considerations for installation

Various functions in Power Manager have dependency on hardware, BIOS, drivers, and other ThinkVantage Technologies (TVTs). When a function is not supported on a client computer, the function is hidden in Power Manager. Installing the latest version of the following software is strongly recommended to enable the full range of functions in Power Manager.

- BIOS update
- ThinkPad Power Management Driver
- Hotkey driver
- Access Connections™

Installing Power Manager

To install Power Manager without user's interaction, do the following:

1. Start the Windows XP, Windows Vista®, or Windows 7 operating system, and then log in with administrative privileges.
2. Extract the Power Manager software package to the hard disk drive. For example:

   ```
   C:\Drivers\Vista\PWRMGRV
   ```
3. Depending on the operating system, do one of the following:
   - For Windows XP operating system users

     Click **Start** → **Run**, and then type `cmd` in the **Open** box to open the command prompt window.
   - For Windows Vista or Windows 7 operating system users

     Click **Start**, type `cmd` in the **Start Search** box, and then select **run as administrator** to open the command prompt window.
4. Install Power Manager silently with a default path for installation log by using the following command line:

   ```
   <path>\setup.exe -S –SMS
   ```

To install Power Manager interactively, do the following:

1. Start the Windows XP, Windows Vista®, or Windows 7 operating system, and then log in with administrative privileges.

2. Double-click the Power Manager software package. The Ready to Install window opens.
3. In the Select Destination Location window, click **Next**. If you would like to select a different folder, click **Browse**.
4. In the Ready to Install window, click **Install**. All the necessary files will be extracted to the folder selected in step 3.
5. Make sure that you have selected the **Install ThinkVantage Power Manager now** option and click **Finish**.
6. Follow the instructions on the screen to complete installation and restart the computer.

Note: Power Manager has two different versions. One is for Windows XP operating systems and the other is for Windows Vista and Windows 7 operating systems. When you install Power Manager on your computer, match the Power Manager version with your operating system. Power Manager designed specifically for Windows Vista and Windows 7 operating systems might not function correctly on Windows XP operating systems, and vice versa.

Chapter 3. Working with Active Directory and ADM files

Active Directory provides a mechanism that enables administrators to manage computers, groups, end users, domains, security policies, and any type of user-defined objects. The mechanisms that Active Directory uses to accomplish this are known as Group Policy and Administrative Template (ADM) files. With Group Policy and ADM files, IT administrators define settings that can be applied to computers or users in the domain.

Lenovo provides Power Manager ADM files for Windows XP, Windows Vista, and Windows 7 client computers, with four categories of policy settings: General Setting, Power Plan (Scheme) Deployments, Global Power Settings, and Battery Maintenance.

Adding Administrative Templates

Designed to save your time and effort, Lenovo provides the administrative template files, "PWMGPO.ADM" for Windows XP operating systems, and "PMVGPO.ADM" for Windows Vista and Windows 7 operating systems, which can be used with Group Policy Editor to set the policies for Power Manager. These ADM files can be downloaded from the Lenovo Support Web site at: http://www.lenovo.com/support/site.wss/document.do?lndocid=TVAN-ADMIN

To add the Power Manager ADM files to the Group Policy Editor, do the following:

1. On the computer running the Active Directory, click **Start** → **Run**, and type `gpedit.msc`. The Group Policy Editor window opens.
2. Under **Computer Configuration**, right-click **Administrative Templates**.
3. Click **Add/Remove Templates**, and the Add/Remove Templates window opens.
4. Click **Add**, and select the PWMGPO.ADM file for Windows XP client computers.
5. Click **Add**, and select the PMVGPO.ADM file for Windows Vista and Windows 7 client computers.
6. Click **Close** to close the Add/Remove Templates window.
7. Check that the ADM files have been added to the Group Policy Editor by doing the following:
   - For Windows XP operating systems
     a. Under **Computer Configuration**, expand **Administrative Templates**. A new item named **Lenovo ThinkVantage Components** is present.
     b. Expand **Lenovo ThinkVantage Components**, a sub-item named **Power Manager** is present.
   - For Windows Vista and Windows 7 operating systems
     a. Under **Computer Configuration**, expand **Administrative Templates** and navigate to **Classic Administrative Templates**. A new item named **Lenovo ThinkVantage Components** is present.
     b. Expand **Lenovo ThinkVantage Components**, a sub-item named **Power Manager for Vista/7** is present.

Notes:

a. The policy settings in the **Power Manager** configuration item are for Windows XP client computers, and these policy settings do not affect Windows Vista and Windows 7 client computers.

b. The policy settings in the **Power Manager for Vista/7** configuration item are for Windows Vista and Windows 7 client computers, and these policy settings do not affect Windows XP client computers.

General Setting

General Setting policies enables IT administrator to configure general settings such as selecting an active power plan.

To configure General Setting policies, do the following:

- For Windows XP client computers

  Under **Computer Configuration**, click **Administrative Templates** → **Lenovo ThinkVantage Components** → **Power Manager** → **General Setting**.

- For Windows Vista or Windows 7 client computers

  Under **Computer Configuration**, click **Administrative Templates** → **Classic Administrative Templates** → **Lenovo ThinkVantage Components** → **Power Manager for Vista/7** → **General Setting**.

This table provides detailed information about each policy setting.

Table 1. General Setting

Policy settings	Description
Do not allow client to switch power plan	Specifies whether to allow switching power plan on client computers. If this policy setting is enabled and users change the power plan, Power Manager will automatically changes the current power plan back to the original power plan. **Note:** This policy does not inhibit users from modifying the power saving settings in the active power plan. When this policy is enabled, users can move the slider in Basic mode on Windows Vista or Windows 7 operating systems to modify the power saving settings in the active power plan. However, if the original power plan is set to **Maximum Performance** or **Maximum Battery Life**, users cannot use the slider to modify the power saving settings in the power plan.When this policy is enabled, users still can modify the active power plan, or move the slider control in the Basic mode.

Table 1. General Setting (continued)

Policy settings	Description
Do not allow client to create new power plan	Specifies whether to allow creating a new power plan in Power Manager on client computers. If you enable this policy setting, the **New** button for creating power plans in Power Manager main user interface is unavailable, though users can create a power plan outside Power Manager. For example, users can create a power plan using Power Option tool in Control Panel.
Do not allow client to select specific power plan	Specifies whether to allow selecting specific power plan owned by Power Manager on client computers. If you enable this policy setting, you must input the power plan name. When a plan name is selected and this name is not allowed, the current power plan is switched to another predefined power plan. **Notes:** 1. Power Manager searches available power plans in the following order: a. Power Manager looks for **Energy Star** power plan, which is called as **ThinkPad Default** on some systems. b. If the above search fails or it is not allowed, Power Manager looks for **Power Source Optimized** power plan. c. If the above search fails or it is not allowed, Power Manager looks for **Maximum Battery Life** power plan. 2. Only power plans visible in Power Manager can be specified, and Windows default power plans cannot be specified.
Select an Active Power Plan	Specifies the name of the power plan owned by Power Manager to make it active on client computers. **Notes:** 1. The specified power plan name should exist on client computers. 2. If you enable this policy setting, you must input the power plan name. Power Manager applies power plan specified in this policy during startup. Even when an active power plan is specified by this policy, the user is able to change active power plan after Power Manager startup.

Table 1. General Setting (continued)

Policy settings	Description
Hide Internet Access	Specifies whether or not to hide the Internet access. If you enable this policy setting, all Web links in Power Manager are hidden. Also, the Buy a battery link in Windows Power Option is deleted by selecting **Delete** in all pull-down menus. **Note:** When the Buy a battery link is deleted by this policy, the link does not appear even when this policy is disabled.
Power Logging	Specifies the log output setting of the AC/DC wattage. **Note:** This setting is not supported on Windows XP client computers.

Power Plan (Scheme) Deployments

The policy settings in the **Power Plan Deployments** configuration item enables the IT administrator to create custom power plans and deploy those power plans. The IT administrator needs to configure every policy under this configuration item. Policy settings in the **Power Plan Deployments** configuration item cannot be used to edit existing power plans on client computers. Once a power plan is deployed, the IT administrator cannot edit the power plan from the server side. To deploy a new power plan, the IT administrator needs to configure a power plan with a different power plan name.

To configure the **Power Plan (Scheme) Deployments** policies, do the following:

- For Windows XP client computers

  Under **Computer Configuration**, click **Administrative Templates → Lenovo ThinkVantage Components → Power Manager → Power Plan (Scheme) Deployments**.

- For Windows Vista or Windows 7 client computers

  Under **Computer Configuration**, click **Administrative Templates → Classic Administrative Templates → Lenovo ThinkVantage Components → Power Manager for Vista/7 → Power Plan (Scheme) Deployments**.

This table provides detailed information about each policy setting. In this table, (AC) means the policy setting for client computers with ac power adapter plugged, and (DC) means the policy setting for client computers on battery power.

Table 2. Power Plan (Scheme) Deployments

Policy settings	Description
Plan Name	Specifies the name of the power plan to deploy to client computers. If you enable this policy setting, you must input the power plan name. A limit of the power plan name is 32 single-byte characters. If the power plan name is double-byte, limit the power plan name to 16 characters. **Note:** Once a power plan is deployed, you cannot edit the power plan from the server side. When you change a power plan name, the power plan is deployed as a new power plan to client computers.
Maximum CPU Speed (AC)	Specifies the maximum speed of CPU. Possible maximum speeds include: • Highest • Adaptive • Low • Lowest
Maximum CPU Speed (DC)	Specifies the maximum speed of CPU. Possible maximum speeds include: • Highest • Adaptive • Low • Lowest
CPU Deeper Sleep (AC)	Specifies whether to enable the CPU to enter the deeper sleep state. If you enable this policy setting, the CPU will go into the deeper sleep state.
CPU Deeper Sleep (DC)	Specifies whether to enable the CPU to enter the deeper sleep state. If you enable this policy setting, the CPU will go into the deeper sleep state.
Optimize fan control to (AC)	Specifies the fan control mode. Possible fan control modes include: • Maximize performance • Balance all parameters • Reduce noise dynamically **Note:** The **Reduce noise dynamically** option does not take effect if the **Maximum CPU speed (AC)** option is set to ″Low″ or ″Lowest.″

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Optimize fan control to (DC)	Specifies the fan control mode. Possible fan control modes include: • Maximize performance • Balance all parameters • Reduce noise dynamically **Note:** The **Reduce noise dynamically** option does not take effect if the **Maximum CPU speed (AC)** option is set to ″Low″ or ″Lowest.″
Display Brightness 16 (AC)	Specifies the brightness level of client computer displays with 16 brightness steps. If a brightness level is high, the display gets bright.
Display Brightness 16 (DC)	Specifies the brightness level of client computer displays with 16 brightness steps. If a brightness level is high, the display gets bright.
Display Brightness 8 (AC)	Specifies the brightness level of client computer displays with 8 brightness steps.
Display Brightness 8 (DC)	Specifies the brightness level of client computer displays with 8 brightness steps.
Switchable Graphics (AC)	Specifies the graphics mode of the NVIDIA switchable graphics. Possible graphics modes include: • Energy Saving • High Performance **Notes:** 1. If you enable this policy setting, you must select a graphics mode. 2. This setting is not supported on Windows XP client computers.
Switchable Graphics (DC)	Specifies the graphics mode of the NVIDIA switchable graphics. Possible graphics modes include: • Energy Saving • High Performance **Notes:** 1. If you enable this policy setting, you must select a graphics mode. 2. This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Intel Graphics Power Plan (AC)	Specifies the power plan of the Intel graphics subsystem. Possible power plans include: • Maximum Battery Life • Balanced • Maximum Performance **Note:** If you enable this policy setting, you must select a power plan.
Intel Graphics Power Plan (DC)	Specifies the power plan of the Intel graphics subsystem. Possible power plans include: • Maximum Battery Life • Balanced • Maximum Performance **Note:** If you enable this policy setting, you must select a power plan.
Automatic optical drive power off (AC)	Specifies whether to automatically turn off the optical drive when the following conditions are met: • System has started but no CD or DVD has been inserted within 10 minutes. • The CD or DVD has been removed and has not been replaced within 10 minutes.
Automatic optical drive power off (DC)	Specifies whether to automatically turn off the optical drive when the following conditions are met: • System has started but no CD or DVD has been inserted within 10 minutes. • The CD or DVD has been removed and has not been replaced within 10 minutes.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Lower display brightness 16 (DC)	Specifies the period of inactivity before lowering the display brightness and the brightness level when the **Lower display brightness 16** setting takes effect after the specified period. The brightness level must be lower than the brightness level specified in **Display Brightness 16** setting. This setting is for the client computers with 16 brightness steps. Possible time periods include: • 1 minute (Windows XP only) • 2 minutes (Windows XP only) • 3 minutes (Windows XP only) • 5 minutes (Windows XP only) • 10 minutes (Windows XP only) • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes **Note:** This setting is not supported in AC mode and on Windows 7 client computers.
Lower display brightness 8 (DC)	Specifies the period of inactivity before lowering the display brightness and the brightness level when the **Lower display brightness 8** setting takes effect after the specified period. The brightness level must be lower than the brightness level specified in **Display Brightness 8** setting. This setting is for the client computers with 8 brightness steps. Possible time periods include: • 1 minute (Windows XP only) • 2 minutes (Windows XP only) • 3 minutes (Windows XP only) • 5 minutes (Windows XP only) • 10 minutes (Windows XP only) • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes **Note:** This setting is not supported in AC mode and on Windows 7 client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Dim display (AC)	Specifies the period of inactivity before Windows automatically reduces the display brightness and the brightness level when the **Dim display** setting takes effect after the specified period. You can specify the period of inactivity in seconds. **Note:** This setting is supported only on Windows 7 client computers.
Dim display (DC)	Specifies the period of inactivity before Windows automatically reduces the display brightness and the brightness level when the **Dim display** setting takes effect after the specified period. You can specify the period of inactivity in seconds. **Note:** This setting is supported only on Windows 7 client computers.
Minimize display refresh rate (DC)	Specifies the period of inactivity before minimizing display refresh rate. Possible time periods include: • 1 minute (Windows XP only) • 2 minutes (Windows XP only) • 3 minutes (Windows XP only) • 5 minutes (Windows XP only) • 10 minutes (Windows XP only) • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes **Note:** This setting is not supported in AC mode.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Switch to Energy Saving Graphics (AC)	Specifies the period of inactivity before switching to energy saving graphics. Possible time periods include: • 2 minutes • 5 minutes • 10 minutes • 15 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • Never **Notes:** 1. If you enable this policy setting, you must select a time period. 2. This setting is not supported on Windows XP client computers.
Switch to Energy Saving Graphics (DC)	Specifies the period of inactivity before switching to energy saving graphics. Possible time periods include: • 2 minutes • 5 minutes • 10 minutes • 15 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • Never **Notes:** 1. If you enable this policy setting, you must select a time period. 2. This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Monitor off Timer (AC)	Specifies the period of inactivity before Windows turns off the display. For Windows XP client computers, possible time periods include: • 1 minute • 2 minutes • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours For Windows Vista and Windows 7 client computers, you can specify the value in seconds.
Monitor off Timer (DC)	Specifies the period of inactivity before Windows turns off the display. For Windows XP client computers, possible time periods include: • 1 minute • 2 minutes • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours For Windows Vista and Windows 7 client computers, you can specify the value in seconds.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
HDD off Timer (AC)	Specifies the period of inactivity before Windows turns off the hard disk drive. For Windows XP client computers, possible time periods include: • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours For Windows Vista and Windows 7 client computers, you can specify the value in seconds.
HDD off Timer (DC)	Specifies the period of inactivity before Windows turns off the hard disk drive. For Windows XP client computers, possible time periods include: • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours For Windows Vista and Windows 7 client computers, you can specify the value in seconds.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Standby Timer (AC)	Specifies the period of inactivity before Windows enters the sleep mode. Possible time periods include: • 1 minute • 2 minutes • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours For Windows Vista and Windows 7 client computers, you can specify the value in seconds.
Standby Timer (DC)	Specifies the period of inactivity before Windows enters the sleep mode. Possible time periods include: • 1 minute • 2 minutes • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours For Windows Vista and Windows 7 client computers, you can specify the value in seconds.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Hibernation Timer (AC)	Specifies the period of inactivity before the Windows operating system enters hibernation mode. Possible time periods include: • 1 minute • 2 minutes • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours • 6 hours **Note:** The period should be longer than the period of inactivity specified in the **Standby Timer** setting on Windows XP client computers. For Windows Vista and Windows 7 client computers, you can specify the value in seconds.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Hibernation Timer (DC)	Specifies the period of inactivity before the Windows operating system enters hibernation mode. Possible time periods include: • 1 minute • 2 minutes • 3 minutes • 5 minutes • 10 minutes • 15 minutes • 20 minutes • 25 minutes • 30 minutes • 45 minutes • 1 hour • 2 hours • 3 hours • 4 hours • 5 hours • 6 hours **Note:** The period should be longer than the period of inactivity specified in **Standby Timer** setting on Windows XP client computers. For Windows Vista and Windows 7 client computers, you can specify the value in seconds.
Allow Hybrid Sleep (AC)	Enables Hybrid Sleep. If you enable this policy setting and select **On**, a file called `hiberfil.sys` is generated to store the contents of RAM (Random Access Memory) when the system enters sleep (Stand by) mode. This setting is not supported on Windows XP client computers.
Allow Hybrid Sleep (DC)	Enables Hybrid Sleep. If you enable this policy setting and select **On**, a file called `hiberfil.sys` generated to store the contents of RAM when the system enters sleep (Stand by) mode. This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Allow Wake Timers (AC)	Specifies whether to allow the Windows operating system to automatically wake your computer from sleep mode on a timer for scheduled tasks and other programs. If you enable this policy setting, the system, for example, might wake automatically to install updates. This setting is supported only on Windows 7 client computers.
Allow Wake Timers (DC)	Specifies whether to allow the Windows operating system to automatically wake your computer from sleep mode on a timer for scheduled tasks and other programs. If you enable this policy setting, the system, for example, might wake automatically to install updates. This setting is not supported on Windows 7 client computers.
Wireless Power Saving Mode (AC)	Specifies the performance of wireless adapters. Possible performances include: • Maximum Performance • Low Power Saving • Medium Power Saving • Maximum Power Saving This setting is not supported on Windows XP client computers.
Wireless Power Saving Mode (DC)	Specifies the performance of wireless adapters. Possible performances include: • Maximum Performance • Low Power Saving • Medium Power Saving • Maximum Power Saving This setting is not supported on Windows XP client computers.
PCI Link State Power Management (AC)	Specifies the active state when the PCI link is idle. Possible states include: • Off • Moderate power savings • Maximum power savings This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
PCI Link State Power Management (DC)	Specifies the active state when the PCI link is idle. Possible states include: • Off • Moderate power savings • Maximum power savings This setting is not supported on Windows XP client computers.
Multimedia settings when sharing media (AC)	Specifies the action that the Windows operating system allows when media files can be played. Possible actions include: • Allow the computer to sleep • Prevent idling to sleep • Allow the computer to enter away mode This setting is not supported on Windows XP client computers.
Multimedia settings when sharing media (DC)	Specifies the action that the Windows operating system allows when media files can be played. Possible actions include: • Allow the computer to sleep • Prevent idling to sleep • Allow the computer to enter away mode This setting is not supported on Windows XP client computers.
Multimedia settings when playing video (AC)	Specifies whether Windows Media® Player favors power saving or performance when playing video content. Possible values include: • Optimize video quality • Balanced • Optimize power savings This setting is only supported on Windows 7 client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Multimedia settings when playing video (DC)	Specifies whether Windows Media Player favors power saving or performance when playing video content. Possible values include: • Optimize video quality • Balanced • Optimize power savings This setting is only supported on Windows 7 client computers.
Adaptive Display (AC)	Manages how the Windows operating system controls the setting that specifies how long a computer must be inactive before the Windows operating system turns off the computer display. If this policy is enabled and users select **On** from the pull-down menu, the Windows operating system will automatically adjust the setting based on what users do with their keyboard or mouse to keep the computer display on. This setting is supported only on Windows Vista client computers.
Adaptive Display (DC)	Manages how the Windows operating system controls the setting that specifies how long a computer must be inactive before the Windows operating system turns off the computer display. If this policy is enabled and users select **On** from the pull-down menu, the Windows operating system will automatically adjust the setting based on what users do with their keyboard or mouse to keep the computer display on. This setting is supported only on Windows Vista client computers.
Search and indexing (AC)	Specifies the search speed and performance of indexing. Possible values include: • Power Saver • Balanced • High Performance This setting is supported only on Windows Vista client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Search and indexing (DC)	Specifies the search speed and performance of indexing. Possible values include: • Power Saver • Balanced • High Performance This setting is supported only on Windows Vista client computers.
USB selective suspend (AC)	Specifies whether or not the computer can suspend an individual port. If you enable this policy setting and select **Enabled**, the computer can suspend an individual port. This setting is not supported on Windows XP client computer.
USB selective suspend (DC)	Specifies whether or not the computer can suspend an individual port. If you enable this policy setting and select **Enabled**, the computer can suspend an individual port. This setting is not supported on Windows XP client computer.
Slide show (AC)	Specifies the behavior of the desktop background slide show. Possible values include: • Available • Paused This setting is supported only on Windows 7 client computers.
Slide show (DC)	Specifies the behavior of the desktop background slide show. Possible values include: • Available • Paused This setting is supported only on Windows 7 client computers.
System cooling policy (AC)	Specifies Windows thermal behavior on systems that support active cooling features. Possible values include: • Available • Paused This setting is supported only on Windows 7 client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
System cooling policy (DC)	Specifies Windows thermal behavior on systems that support active cooling features. Possible values include: • Available • Paused This setting is supported only on Windows 7 client computers.
Fn+F4 (AC)	Specifies the action that the Windows operating system takes when pressing the Fn+F4 keys. Possible actions include: • Do nothing • Sleep • Hibernate This setting is not supported on Windows XP client computers.
Fn+F4 (DC)	Specifies the action that the Windows operating system takes when pressing the Fn+F4 keys. Possible actions include: • Do nothing • Sleep • Hibernate This setting is not supported on Windows XP client computers.
Power button (AC)	Specifies the action that the Windows operating system takes when a user presses the power button on the computer. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Power button (DC)	Specifies the action that the Windows operating system takes when a user presses the power button on the computer. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computers.
Lid closed (AC)	Specifies the action that the Windows operating system takes when a user closes the lid on a notebook computer. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computers.
Lid closed (DC)	Specifies the action that the Windows operating system takes when a user closes the lid on a notebook computer. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computer.
Start menu power button (AC)	Specifies the action that the Windows operating system takes when a user selects the power button from the **Start** menu. Possible actions include: • Sleep • Hibernate • Shut down This setting is supported only on Windows Vista client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Start menu power button (DC)	Specifies the action that the Windows operating system takes when a user selects the power button from the **Start** menu. Possible actions include: • Sleep • Hibernate • Shut down This setting is supported only on Windows Vista client computers.
Low battery alarm level (AC)	Specifies the percentage of battery capacity remaining that triggers the low battery alarm action. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the low notification. To set the action that is triggered, see the "CrLow battery action (AC)" on page 27 policy setting. This setting is not supported on Windows XP client computers.
Low battery alarm level (DC)	Specifies the percentage of battery capacity remaining that triggers the low battery alarm action. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the low notification. To set the action that is triggered, see the "CrLow battery action (AC)" on page 27 policy setting. This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Low battery alarm notification (AC)	Enables a user notification when the battery capacity remaining equals the low battery alarm level. If you enable this policy setting and select **On**, the Windows operating system will show a notification when the battery capacity remaining equals the low battery alarm level. To configure the low battery alarm level, see the "Low battery alarm level (AC)" on page 26 policy setting. The notification will only be shown if the **Low battery action** policy setting is configured to **Do nothing**. If you disable this policy setting or do not configure it, users can see and change this setting. This setting is not supported on Windows XP client computers.
Low battery alarm notification (DC)	Enables a user notification when the battery capacity remaining equals the low battery alarm level. If you enable this policy setting and select **On**, the Windows operating system will show a notification when the battery capacity remaining equals the low battery alarm level. To configure the low battery alarm level, see the "Low battery alarm level (AC)" on page 26 policy setting. The notification will only be shown if the **Low battery action** policy setting is configured to **Do nothing**. If you disable this policy setting or do not configure it, users can see and change this setting. This setting is not supported on Windows XP client computers.
Low battery action (AC)	Specifies the action that the Windows operating system takes when battery capacity reaches the low battery alarm level. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Low battery action (DC)	Specifies the action that the Windows operating system takes when battery capacity reaches the low battery alarm level. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computers.
Reserve battery alarm level (AC)	Specifies the percentage of battery capacity remaining that triggers reserve power mode. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the reserve power notification. This setting is supported only on Windows 7 client computers.
Reserve battery alarm level (DC)	Specifies the percentage of battery capacity remaining that triggers reserve power mode. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the reserve power notification. This setting is supported only on Windows 7 client computers.
Critical battery alarm level (AC)	Specifies the percentage of battery capacity remaining that triggers the critical battery alarm action. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the critical notification. **Note:** The value should be lower than the level specified by **Low battery alarm level**. To set the action that is triggered, see "Critical battery alarm action (AC)" on page 29. If you disable this policy setting or do not configure it, users can see and change this setting. This setting is not supported on Windows XP client computers.

Table 2. Power Plan (Scheme) Deployments (continued)

Policy settings	Description
Critical battery alarm level (DC)	Specifies the percentage of battery capacity remaining that triggers the critical battery alarm action. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the critical notification. **Note:** The value should be lower than the level specified by **Low battery alarm level**. To set the action that is triggered, see "Critical battery alarm action (AC)." If you disable this policy setting or do not configure it, users can see and change this setting. This setting is not supported on Windows XP client computers.
Critical battery alarm action (AC)	Specifies the action that the Windows operating system takes when battery capacity reaches the critical battery alarm level. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computers.
Critical battery alarm action (DC)	Specifies the action that the Windows operating system takes when battery capacity reaches the critical battery alarm level. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down This setting is not supported on Windows XP client computers.

Global Power Setting

Global Power Setting policies enables you to configure global power settings.

To configure Global Power Setting policies, do the following:

- For Windows XP client computers

Under **Computer Configuration**, click **Administrative Templates → Lenovo ThinkVantage Components → Power Manager → Global Power Setting**.

- For Windows Vista or Windows 7 client computers

  Under **Computer Configuration**, click **Administrative Templates → Classic Administrative Templates → Lenovo ThinkVantage Components → Power Manager for Vista/7 → Global Power Setting**.

This table provides detailed information about each policy.

Table 3. Global Power Setting

Policy settings	Description
Beep when power state changes	Specifies whether the computer beeps when it is in one of the following conditions: • When the computer enters standby mode. • When the computer resumes operation after being in standby mode. • When the computer enters hibernation mode. • When the computer resumes operation after being in hibernation mode. • When the ac power adapter is connected to the computer or is disconnected from the computer. If you enable this policy setting, the computer will sound a beep.
Require password on standby resume	Specifies whether or not the user is prompted for a password when the system resumes from sleep. If you enable this policy setting, the user will be prompted for a password when the system resumes from sleep. This setting is supported only for the administrator account. For Windows Vista and Windows 7 operating systems, this setting takes effect only when the User Account Control (UAC) feature is disabled.
Enable Hibernation	Specifies whether to enable the computer to enter hibernation mode. This setting is supported only on Windows XP client computers.
Always On USB	Specifies whether to supply the USB power when the computer is in standby mode, in hibernation mode, or turned off. Possible modes include: • iPod® or iPhone™ digital devices • BlackBerry® smartphone • Others • Automatically detect device **Note:** If you enable this policy setting, you must select a mode.

Table 3. Global Power Setting (continued)

Policy settings	Description
Apply Video playback power plan automatically	Specifies whether to automatically change the power plan when WinDVD is playing Blu-ray. If you enable this policy setting, the power plan will be changed to Video Playback when WinDVD is playing Blu-ray.
Dynamic Brightness Control	Specifies whether the brightness of the computer display automatically decreases in the following specific situations: • When the computer starts up or shuts down • When you log off the system • When you switch the user • When the computer is locking the screen • When the computer is displaying a screen saver
Undock action	Specifies the action that the Windows operating system takes when the computer is undocked. Possible actions include: • No action • Standby • Hibernate
CD-ROM speed	Specifies the speed of the CD-ROM drive. Possible speeds include: • High performance • Normal • Silent
Power Management CPU	Specifies the action that the Windows operating system takes when there is no system activity for a specified interval. Possible actions include: • Automatic • Disabled If you select **Automatic**, then when there is no system activity for a specified interval, the power-saving function is enabled and the microprocessor clock will be stopped automatically. If you select **Disabled**, the battery life will be shorter.

Table 3. Global Power Setting (continued)

Policy settings	Description
Power Management PCI bus	Specifies the action that the Windows operating system takes when there is no system activity for a specified interval. Possible actions include: • Automatic • Disabled If you select **Automatic**, the PCI Bus clock is stopped if there is no activity. If you select **Disabled**, the battery life will be shorter.
Fn+F4	Specifies the action that the Windows operating system takes when pressing the Fn+F4 keys. Possible actions include: • Do nothing • Sleep • Hibernate
Power button	Specifies the action that the Windows operating system takes when a user presses the power button. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down
Lid closed	Specifies the action that the Windows operating system takes when a user closes the lid on a notebook computer. Possible actions include: • Do nothing • Sleep • Hibernate • Shut down
Start menu power button	Specifies the action that the Windows operating system takes when a user selects the power button from the **Start** menu. Possible actions include: • Sleep • Hibernate • Shut down This setting is supported only on Windows Vista client computers.

Table 3. Global Power Setting (continued)

Policy settings	Description
Enable Low battery alarm	Specifies whether or not the computer enables the low battery alarm. This setting is supported only on Windows XP client computers.
Low battery alarm level	Specifies the percentage of battery capacity remaining that triggers the low battery alarm action. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the low notification. To set the action that is triggered, see "Low battery alarm notification" policy setting.
Low battery alarm notification	Enables a user notification when the battery capacity remaining equals the low battery alarm level. For Windows XP client computers, possible notifications include: • No action • Message • Beep • Message and beep For Windows Vista and Windows 7 client computers, possible notifications include: • Off • On
Low battery action	Specifies the action that the Windows operating system takes when battery capacity reaches the low battery alarm level. For Windows XP client computers, possible actions include: • No action • Standby • Hibernate • Shutdown • Maximize battery life For Windows Vista and Windows 7 client computers, possible actions include: • Do nothing • Sleep • Hibernate • Shut down • Maximize battery life

Table 3. Global Power Setting (continued)

Policy settings	Description
Enable Critical battery alarm	Specifies whether or not the computer enables the critical battery alarm. This setting is supported only on Windows XP client computers.
Critical battery alarm level	Specifies the percentage of battery capacity remaining that triggers the critical battery alarm action. If you enable this policy setting, you must enter a numeric value (percentage) to set the battery level that triggers the critical notification. **Note:** The value should be lower than the level specified by **Low battery alarm level**. To set the action that is triggered, see the "Critical battery alarm action" policy setting.
Critical battery alarm notification	Enables a user notification when the battery capacity remaining equals the critical battery alarm level. Possible notifications include: • No action • Message • Beep • Message and beep **Note:** This setting is supported only for the administrator account on Windows XP client computers.
Critical battery alarm action	Specifies the action that the Windows operating system takes when battery capacity reaches the critical battery alarm level. For Windows XP client computers, possible actions include: • No action • Standby • Hibernate • Shutdown For Windows Vista and Windows 7 client computers, possible actions include: • Do nothing • Sleep • Hibernate • Shut down

Battery Maintenance

The Battery Maintenance policy enables you to configure the battery maintenance settings.

To configure the Battery Maintenance policy, do the following:

- For Windows XP client computers

  Under **Computer Configuration**, click **Administrative Templates** → **Classic Administrative Templates** → **Lenovo ThinkVantage Components** → **Power Manager** → **Battery Maintenance**.
- For Windows Vista or Windows 7 client computers

  Under **Computer Configuration**, click **Administrative Templates** → **Classic Administrative Templates** → **Lenovo ThinkVantage Components** → **Power Manager for Vista/7** → **Battery Maintenance**.

This table provides detailed information about each policy setting.

Table 4. Battery Maintenance

Policy settings	Description
Battery charge thresholds	Specifies the battery charge thresholds. This policy applied to *normal* batteries only. Possible charge thresholds include: • Always fully charge (Start when below 96%; stop at 100%) • Optimize for battery lifespan (automatically change for me) **Note:** If you select this option, the Notify me when thresholds change setting is available for selection. • Custom **Note:** If you select this option, the value in the **Stop charging at** spinbox must be set at least 4% above the value of the **Start charging when below** spinbox. Otherwise, you will deploy the Always fully charge (Start when below 96%; stop at 100%) setting to the client computers.

Table 4. Battery Maintenance (continued)

Policy settings	Description
Battery charge modes	Specifies the battery charge modes. This policy apply to *dual mode* batteries only. Possible charge modes include: • Always fully charge (Start when below 96%; stop at 100%) • Optimize for battery lifespan (automatically change for me) **Note:** If you select this option, the Notify me when thresholds change setting is available for selection. • Custom **Note:** If you select this option, the value in the **Stop charging at** spinbox must be set at least 4% above the value of the **Start charging when below** spinbox. Otherwise, you will deploy the Always fully charge (Start when below 96%; stop at 100%) setting to the client computers.

Appendix A. Deploying power schemes for non-administrator groups or users on Windows XP client computers

Non-administrator groups or users on Windows XP client computers have no permission to change the power scheme settings. By design, this is a feature of the Windows XP operating system. To deploy Power Manager plans successfully to Windows XP client computers for non-administrator groups or users, the IT administrator needs to configure the domain server by doing the following:

1. On a domain server, click **Start** → **Run**, and type `dsa.msc` in the **Open** box. The Active Directory Users and Computers window opens.
2. Right-click on a domain container and select **Properties**. The Properties window opens.
3. Click the **Group Policy** tab, and click the **New** button to create a new group policy object.
4. Rename the group policy object with `Power Configuration Policy` and press Enter.
5. Click **Edit**. The Group Policy Object Editor opens.
6. Set the security permission for the following key:

   `MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Controls Folder\PowerCfg`

   by doing the following:

   a. Under **Computer Configuration**, click **Windows Settings** → **Security Settings**, right-click **Registry**, and select **Add Key**. The Select Registry Key window opens.
   b. Type the following key in the **Selected key** box:

      `MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Controls Folder\PowerCfg`

   c. Click **OK**. The Database Security window opens.
   d. On the **Security** tab, select the non-administrator group(s) or user(s) you want to give permission to, assign Full Control permission to the group(s) or user(s), and click **Apply**.
   e. Click **Advanced**. The advanced window opens.
   f. On the **Permissions** tab, select the group(s) or user(s), select the **Allow inheritable permissions from the parent to propagate to this object and all child objects. Include these with entries explicitly defined here.**″ option, and click **OK**. The Add Object window opens.
   g. Select the **Propagate inheritable permissions to all subkeys** option, and click **OK**.
7. Set the security permission for the following key:

   `USERS\.DEFAULT\Control Panel\PowerCfg`

   by doing the following:

   a. Under **Computer Configuration**, click **Windows Settings** → **Security Settings**, right-click **Registry**, and select **Add Key**. The Select Registry Key window opens.
   b. Type the following key in the **Selected key** box:

      `USERS\.DEFAULT\Control Panel\PowerCfg`

   c. Click **OK**. The Database Security window opens.

d. On the **Security** tab, select the non-administrator group(s) or user(s) you want to give permission to, assign Full Control permission to the group(s) or user(s), and click **Apply**.

e. Click **Advanced**. The advanced window opens.

f. On the **Permissions** tab, select the group(s) or user(s), select the **Allow inheritable permissions from the parent to propagate to this object and all child objects. Include these with entries explicitly defined here.**″ option, and click **OK**. The Add Object window opens.

g. Select the **Propagate inheritable permissions to all subkeys** option, and click **OK**.

8. Check there are two group policy objects generated in the Active Directory Users and Computers window:
   - `MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Controls Folder\PowerCfg`
   - `USERS\.DEFAULT\Control Panel\PowerCfg`

Notes:

1. Non-administrator groups or users on Windows XP client computers must have the write permission for the following registry subkeys:
   - `HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion \Controls Folder\PowerCfg`
   - `HKEY_ USERS\.DEFAULT\Control Panel\PowerCfg`
2. For further information on how to use the powercfg.exe utility for power schemes in Windows XP operating systems, refer to the Web site at: http://support.microsoft.com/default.aspx/kb/915160

After completing the configuration, the non-administrator group or user in the Windows XP client computers can have the permission to apply the deployed Power Manager power scheme.

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