



SURVEYOR

Wake on LAN Readiness Guide

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Introduction

Table 1-1 In this Chapter

Topics
<i>About this Guide</i>
<i>What is Wake on LAN?</i>
<i>About Wake on WAN</i>
<i>When is Wake on WAN Needed?</i>

About this Guide

The Surveyor Wake on LAN Readiness Guide helps you prepare your computers for Wake on LAN and your enterprise network for Surveyor Wake on WAN. This section describes who this guide is intended for, gives an overview of Wake on LAN and Wake on WAN, and describes when Wake on WAN is useful.

The Surveyor *Wake on LAN Readiness Guide* provides information for IT administrators who want to evaluate and implement Wake on LAN readiness in their organization.

This guide assumes you are familiar with enterprise computer management and Wake on LAN technology.

The Surveyor *Wake on LAN Readiness Guide* contains information to help you:

- Understand Wake on LAN and Surveyor Wake on WAN.
- Prepare your network for Wake on WAN.
- Remotely enable Wake on LAN on your computers.

Topics in this guide contain the most common or best practice for Wake on LAN readiness, although not necessarily the only way to do so. If you have questions about enabling Wake on LAN, see *Contacting Apteon Technical Support on page a*.

What is Wake on LAN?

Wake on LAN is a network technology that allows you to remotely wake a computer over a local area network.

Wake on LAN instructions are sent to computers on a subnet using a special network packet, called a *magic packet*. When a network card receives a magic packet that matches the computer's MAC address, the card sends the signal to the BIOS to wake the computer from the low-power state it is in (including turning it on if it's off).

To use this technology, a computer's Wake on LAN settings need to be enabled in the BIOS and network card. The network card uses a small amount of power to stay on, even when the computer is turned off, so that it can receive and respond to Wake on LAN packet instructions.

The Wake on LAN settings in the BIOS and network card can vary among hardware vendors. Since 2007, computers purchased and deployed usually have Wake on LAN enabled by default. However, if you want to ensure that your computers can receive magic packet wake requests, you may want to make sure all computers throughout the network are enabled for Wake on LAN.



Note: Wake on LAN is designed to work with wired network connections. Laptops running on battery may not have access to the wired connection. However, starting with OS X 10.6 (Snow Leopard), some Macintosh computers support wireless Wake on Demand. For information, see *Configure Wake on Demand on a Mac OS X Computer* on page 4-5.

About Wake on WAN

Wake on WAN extends Wake on LAN technology to provide a reliable and practical method for waking computers over a large-organization network. It also complies with the standard IT practice of preventing data packets from routing across subnet boundaries.

Wake on WAN Overview

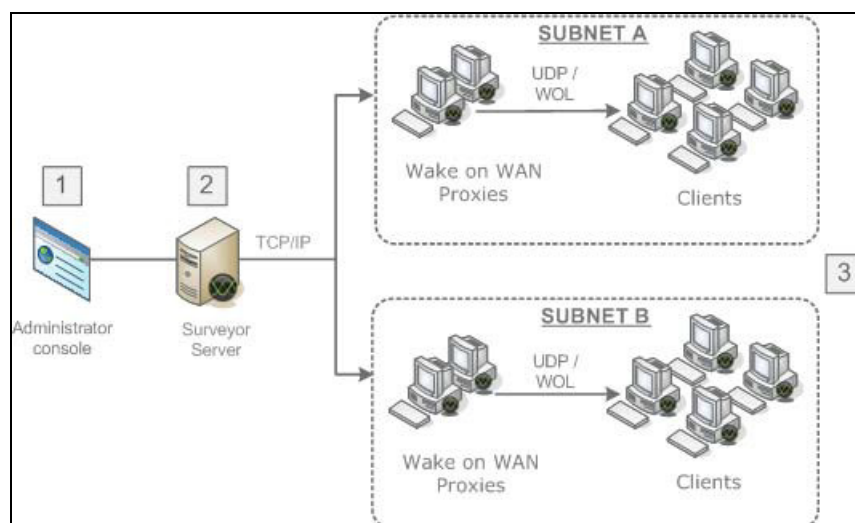
Surveyor wakes computers in a network through Wake on WAN proxy computers. When Wake on WAN proxies are enabled, Surveyor auto-elects Windows or Mac clients on each subnet to serve as primary and secondary Wake on WAN proxies. While other computers transition to a low power state during periods of inactivity, the proxy computers CPUs are kept awake. The primary proxy on each subnet works with the Surveyor server to receive wake requests and forward them to client peers on the same subnet.

By default, Wake on WAN proxies are not enabled when you first start Surveyor for baseline data collection. After the baseline period is over, it is recommended that you set the proxy number to 2 per subnet.

Why elect two Wake on WAN proxies? If the existing primary proxy experiences a problem that interferes with its ability to communicate with the server, the server can immediately promote the secondary proxy to primary. At the same time, the server uses built-in and configurable selection criteria to select another computer on the subnet, waking it if necessary, to act as the new secondary proxy.

You can select as many proxies as you want per subnet (or even specify zero proxies for subnets in which you don't ever want to wake computers from Sleep or Off). However, best practice is to designate at least two.

How Wake on WAN Works



1. Wake request is sent to the server from the Administrator console (on schedule through power scheme or on demand by administrator).
2. Server receives request and sends Wake on LAN magic packet to Wake on WAN proxies on each subnet.
3. The proxy acting as primary receives the message and sends a Wake on LAN packet that contains the target client's MAC address over its subnet. The target computer receives the Wake on LAN packet and wakes.



Note: The additional Wake on WAN proxy role is performed alongside the primary role as a Surveyor client agent. For example, a client elected as a primary proxy forwards wake requests to other clients within the broadcast domain and continues to capture user activity levels. This eliminates the need to install additional agents.

Network-Specific Wake on WAN Configurations

Surveyor Wake on WAN includes optional settings for specifying network-specific configurations to override the default proxy count or to configure networks for subnet-directed broadcasts. For details, see *Configure Specific Networks for Wake on WAN on page 3-9* and *Override the Default Number of Wake on WAN Proxies on a Network on page 3-11*.

Each network that you specify for Wake on WAN can include multiple subnets with Surveyor clients. Surveyor will maintain the number of Wake on WAN proxies that you specify for each subnet.

For networks that use port-based network access control (PNAC), you can specify broadcast networks that will be used with Wake on WAN to wake computers when sleeping computers move from an authorized network to a different, unauthorized network. Additional broadcast networks are especially useful where 802.1x network security is deployed and devices change networks when they are turned off or sleeping. For details, see *Configure Wake on WAN for Subnet-directed Broadcasts on page 3-16* and *About Wake on WAN and Port-based Network Access Control on page 3-13*.



Note: Switches for the networks that you specify as additional broadcast networks must be configured to receive subnet-directed broadcasts from the Surveyor server. See your switch manufacturer documentation for details.

Setting Up the System for Wake on WAN

Wake on WAN is disabled by default on the Surveyor server. To enable Wake on WAN:

- Set Wake on WAN to be enabled in Surveyor server, and also enable policy wake settings. For details, see *Enable Policy Wake on WAN Settings on page 3-2*.
- Confirm that Wake on LAN is enabled on client computers. For information, see *Configure Client Computers for Wake on LAN on page 2-8*.

Wake on WAN Versus Scheduled Wake from Sleep

If your power management policies include scheduled wake requests, waking a computer from sleep this way does not always require Wake on LAN functionality. Enable Wake on WAN if you want to wake clients for operations that are not on a regular schedule, or to wake them from an off state. For best practice information about when to use either method, see *Wake devices on a regular schedule*. You can set devices to wake at a regular specified time through a policy schedule.

How Surveyor Determines Subnet Boundaries

Surveyor uses IP network number clustering and assumes that computers within the same IP network number can broadcast Wake on LAN packets to each other.

The primary Wake on WAN proxy that receives the magic packet broadcasts it to the remaining clients on the subnet using port 7 and the subnet broadcast address. This address is formed by using the subnet's prefix, followed by all 1s. For example for 10.35.0.0/255.255.255.0 the broadcast address would be 10.35.0.255.



Note: Surveyor 5.2 and 5.3 clients broadcast magic packets through port 9. If you used either of these earlier versions and configured the firewall for port 9, make sure that you update the firewall settings to allow communications through port 7.

When is Wake on WAN Needed?

Common scenarios in which Wake on WAN can be advantageous for your organization include patch management, remote computer access, and integration with Microsoft System Center Configuration Manager.



Note: In addition to integration with Configuration Manager, Surveyor has other configuration options that allow you to integrate with your Altiris, Windows Server Update Services (WSUS), or LANDesk patch management schedules.

Patch Management

If your organization's patch management process includes scheduled maintenance windows, it might require computers to be on 24x7. With Surveyor, power schemes and scheduled tasks can be built into your patch management routine, so that computers are awake only when necessary to receive software updates.

Scheduled wake requests that do not use Wake on WAN can be built into Surveyor. However, to be confident that as many computers as possible are awake for patch management, regardless of the power state, use Wake on WAN in addition to the scheduled task.

You configure Wake on WAN in the Administrator console. This includes enabling policy wake settings and configuring clients for Wake on LAN. For information, see *Chapter 2: Preparing the Network for Surveyor Wake on WAN on page 2-1*.

If you want to ensure that even computers that have been turned off receive patch updates, you will need to make sure the BIOS is set up correctly. For information, see *Chapter 4: Enabling Wake on LAN on page 4-1*.

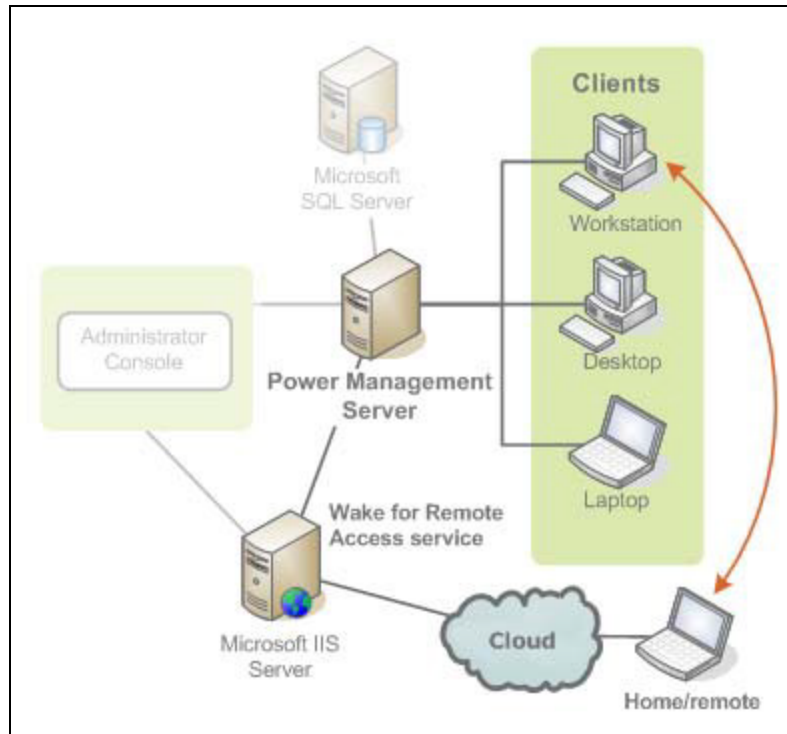
Remote Computer Access

When members of your organization want to access their computers from home or other off-site locations, they may need to wake their on-site computers from a low or off power state. Using Wake on WAN technology with the Wake for Remote Access add-on module enables users to access to their computers remotely any time of day.

Wake for Remote Access uses a standard web browser and a simple web interface. The end user enters or searches for a computer name and then clicks a button to send a message to the Surveyor server to wake the computer. When the Wake for Remote Access page notifies the end user that the computer is awake, the end user can follow your organization's established remote-login procedures to access the computer.



Tip: The users' computers at work must have the Surveyor client agent installed, but they do not need to install it on their home or off-site computers to use Wake for Remote Access.

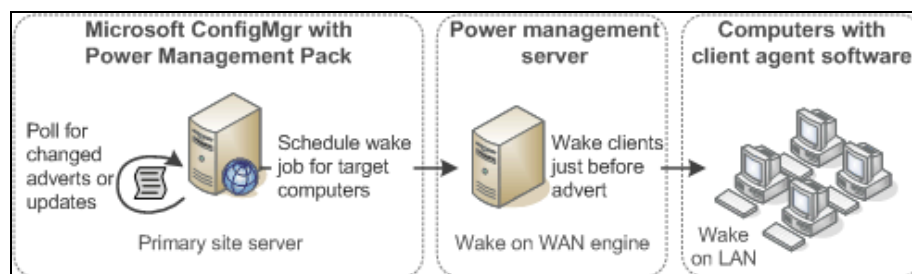


For more information, see the *Verdiem Surveyor Administrator Guide*.

Integration with Verdiem Connect for Microsoft System Center (Windows Clients Only)

If you use Configuration Manager, you can use Wake on WAN to coordinate centralized power management with software updates that you distribute through Configuration Manager.

By combining Configuration Manager with Surveyor, you have more flexibility to keep active computers in a low power state, and then wake them when a software update is ready for distribution.



The Power Management Pack service automatically monitors for pending advertisements and software updates. In combination with Surveyor Wake on WAN, targeted computers reliably wake up for network updates.

2

Preparing the Network for Surveyor Wake on WAN

Table 2-1 In this Chapter

Topics
<i>Determine Whether Windows Computers can Wake from Low Power States</i>
<i>Determine Wake on LAN Support for Computers</i>

Determine Whether Windows Computers can Wake from Low Power States

To prepare for Wake on WAN, you determine the wake support of the client computers, configuring BIOS or network card settings if necessary. You then follow procedures in the Administrator console to implement Wake on WAN on the server side.

Most Surveyor-compatible computers support transitioning to a low power states and waking through a user action. If any of your users has a problem waking a computer, however, you can perform simple tests to determine the computer's wake support.

This procedure contains standard tests for determining a computer's wake capabilities. Following the procedure are suggestions for next steps depending on the results.

1. If the computer is on, transition it to sleep through the Windows Start menu.
2. Do any of the following to test wake capability:
 - Press a key on the keyboard.
 - Move or click the mouse.
 - Press the power button for one second. (Holding the button down longer might shut down the computer.)
3. Repeat the previous two steps, so that you try each method of waking the computer.

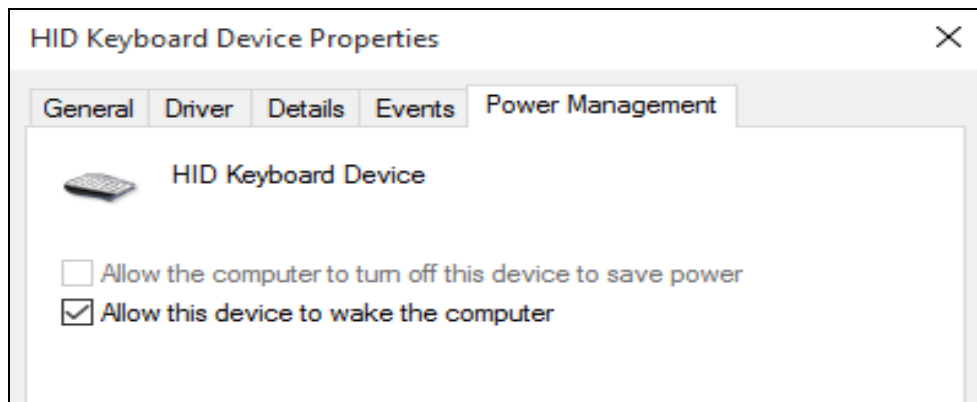
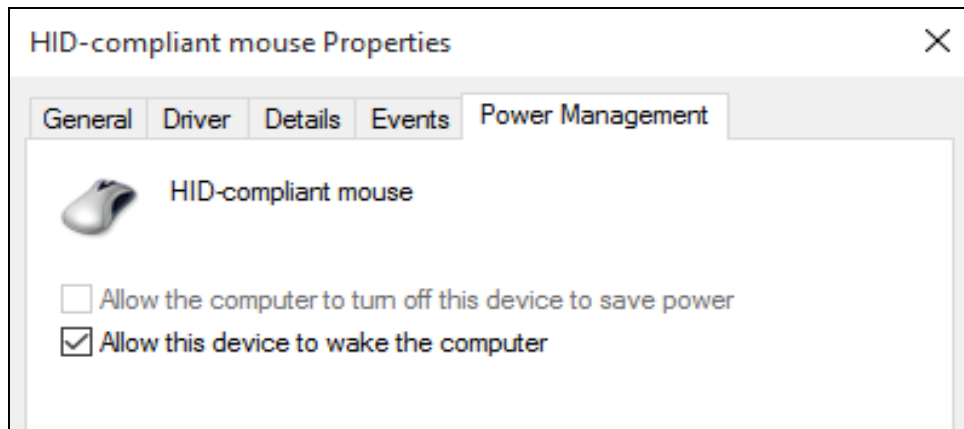
Next steps


- If the computer wakes when you press the power button but not through the keyboard or mouse, you can enable the keyboard and mouse. See *Configure Mouse or Keyboard to Wake the Computer (Windows) on the next page*.
- If the computer does not wake when you press the power button, see [Pressing power button does not wake computer](#) on the Verdiem Knowledge Base.

Configure Mouse or Keyboard to Wake the Computer (Windows)

If you've confirmed that mouse or keyboard actions do not wake a Windows computer from sleep, you can enable them to do so.


1. Open the Windows Control panel, and then open **Device Manager**.
2. Select and expand either **Mouse** or **Keyboard**, then right click and select Properties
3. On the Power Management tab, select **Allow this device to wake the computer**.



 **Note:** If a Power Management tab does not appear in the Mouse or Keyboard Properties dialog box, the device might not support waking from sleep. To support this action, you might need to upgrade the driver or the device itself.

Configure Wake on Mouse/Keyboard from the Administrator Console (Windows)

In some cases, you need to configure support for end users waking their computers through the mouse or keyboard. You can enable multiple devices at once through the Administrator console.

1. On the Surveyor menu , click **Policies**, select a policy in the list, and then click the **Wake Settings** tab.
2. Under Basic Settings, set the following:

Setting	Set to
Wake on mouse movement	Enable
Wake on keyboard press	Enable
Require password on wake	As appropriate for your organization

3. Under **Advanced Settings**, enable all settings.



Note: If you change these settings in an individual policy, that policy will not inherit future changes you make to the policy defaults.

For information about the **Wake on WAN Settings** section, see *About Wake on WAN on page 1-4*.

Determine Wake on LAN Support for Computers

To use Surveyor Wake on WAN, computers must be enabled for Wake on LAN (Windows) or Wake on Demand (Mac). Here are some basic steps, along with symptoms that can indicate that computers are not enabled.

Wake on LAN in Windows Computers

In most cases, Windows computers are Wake on LAN capable when they are:

- Purchased and deployed within the last five years.
- Qualified as Energy Star version 4.0 and later.

However, even if a computer supports Wake on LAN, it may not be enabled by default.

Issues that can indicate that computers are not enabled for Wake on LAN include:

- They can transition to a low power state, but they wake immediately after.
- You have followed the steps for enabling Wake on WAN, and clients do not respond to wake requests sent by Wake on WAN proxies (originating either from a power scheme or an on-demand wake request that you initiated in the Administrator console).

To test Wake on LAN support among a group of computers, you can send a wake request manually from the Administrator console.

Wake on LAN is enabled in the Windows computer's BIOS and the network card (NIC), so settings vary among hardware manufacturers. If you cannot determine whether a computer supports Wake on LAN by using these simple guidelines, the best place to find information specific to the computer is in the documentation provided by the hardware vendor.



Note: Surveyor clients that do not support Wake on LAN can still receive wake requests that you schedule in the Administrator console. You can also continue to measure power use on those clients. These clients are also good candidates for Wake on WAN proxies. For information, see *Set a Client to be a Preferred Wake on WAN Proxy* on page 3-5.

Wake on Demand in Mac OS X Computers

Starting with OS X v10.6 (Snow Leopard), remote wake, called Wake on Demand, is enabled by default. It works along with the Bonjour Sleep Proxy service, which runs on an AirPort Base Station or Time Capsule.

You can read more in Apple Support article [Mac OS X v10.6: About Wake on Demand](#).

Enabling Wake on LAN or Wake on Demand


If you determine that clients support Wake on LAN, but it is not enabled, see the following topics:

- *Manually Configure the NIC for Wake on LAN (Windows Only) on page 4-2*
- *Manually Configure the BIOS for Wake on LAN (Windows Only) on page 4-4*
- *Configure Wake on Demand on a Mac OS X Computer on page 4-5*

Test Wake on LAN Capability of Your Computers

To test whether computers are enabled for Wake on LAN, you can send them a wake request through the Administrator console.

1. In the Surveyor Administrator console (**Devices** view), select the groups that contain the computers you want to test.

Or, click the **Search** button , and use any appropriate combination of the filters and search box to display the computers you want to test.

2. Select the groups that contain the computers you want to test.
3. If the computers displayed are not shut off already, select them, right-click, and then select **Shutdown**.



Note: You need to use shutdown specifically, because a computer in the sleep state can respond to a wake request even if Wake on LAN is not enabled.

4. Give the computers time to power down, then select them again, right-click, and select **Wake**.

Configure Client Computers for Wake on LAN

This topic provides some examples for when you might use Wake on LAN, as well as some general configuration information that you can adapt for your equipment.

If you are not familiar with the Surveyor Wake on WAN concepts yet, see About Wake on WAN on page 10 before you read this topic.

You might need to configure client computers for Wake on LAN if:

- They can transition to standby but wake immediately after.
- You have followed the steps for enabling SurveyorWake on WAN, and some clients do not respond to wake requests sent by Wake on WAN proxies.



Note: Computers that are not enabled for Wake on LAN cannot receive wake requests that are sent through Wake on LAN specifically. However, you can create Surveyor scheduled tasks for power-state changes and measure energy use on those computers.

Configuring a Computer for Wake on LAN

Wake on LAN is enabled in the computer's BIOS and the network card.

The information in these steps assumes that you are using up-to-date hardware that supports Wake on LAN. Your settings might vary slightly. If you have specific questions about Wake on LAN support on your systems, refer to the documentation provided by the hardware vendor.

To Configure a Computer for Wake on LAN

1. In the Control Panel, open the network card's dialog box.

On Windows Vista:

- a. In the Windows Control Panel, open **Network Connections**, right-click the connection that the computer uses, and choose **Properties**.
- b. On the **General** tab, click **Configure**.

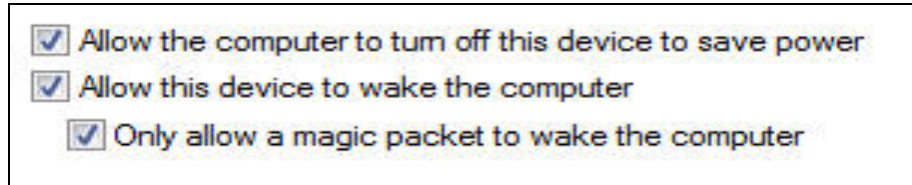
On Windows 7, Windows 8 and Windows 10:

- a. In the Windows Control Panel, open **Network and Internet > Network and Sharing Center > Change Adapter Settings**.
- b. Right-click the connection that the computer uses, and choose **Properties**.
- c. On the **Networking** tab, click **Configure**.

2. On the **Advanced** tab of the network card's dialog box, select the following:

Property	Value
Wake From Shutdown	Enabled or On
Wake-Up Capabilities	Magic Packet or Enabled (depending on the choice)

3. On the **Power Management** tab, select all three check boxes, and then click **OK** and close the Control Panel.



Tip: When you have clients that do not stay in standby because network traffic wakes them up, selecting **Only allow management stations to bring the computer out of standby** resolves the problem.

4. To configure the BIOS, you need to restart your computer, and during the startup process, press the keyboard key that it indicates to enter the BIOS settings. This option appears before Windows starts, and it can vary depending on the computer.

When you have access to the BIOS settings, you enable settings related to devices waking the computer.

For more information, see *Manually Configure the BIOS for Wake on LAN (Windows Only)* on page 4-4 or the computer manufacturer's documentation.

3

Implementing Wake on WAN

Table 3-1 In this Chapter


Topics
<i>Enable Policy Wake on WAN Settings</i>
<i>Set a Client to be a Preferred Wake on WAN Proxy</i>
<i>Set the Number of Wake on WAN Proxies Per Broadcast Domain</i>
<i>Configure Specific Networks for Wake on WAN</i>

Enable Policy Wake on WAN Settings

This section describes how to enable Wake on WAN, configure client wake settings, designate clients as Wake on WAN proxies, and other procedures for configuring Wake on WAN for your environment.

Along with making sure client computers are enabled for Wake on LAN, you enable Surveyor Wake on WAN in your policy settings.

You can change wake settings for a specific policy, or you can set new policy default wake settings.

1. On the Surveyor menu , click **Policies**, select a policy in the list, and then click the **Wake Settings** tab.



Note: You can change wake settings for a specific policy, or you can set new policy default wake settings.

To change the settings that all new policies created will inherit:

- On the Configure menu, click **Policy Defaults**, and then click the **Wake Settings** tab.
-

2. Under **Wake on WAN Settings**, select **Enable all settings**.

On Windows computers, these settings correspond to the network card settings that you configure through the Windows Control Panel. For Mac clients, the only setting that is used is Wake on magic packet only (which can be enabled only when the other two are enabled as well).



Note: The remaining settings on this tab also apply only to Windows clients. For more information, see *Wake Settings Descriptions on the next page*

After you enable the wake settings, run a test wake operation through Wake on LAN. If some clients do not respond, you might need to configure the network card and BIOS separately on those clients.

Wake Settings Descriptions

This topic lists and defines the settings on the Wake Settings tab, which is part of creating and editing policies.


These settings affect how you can wake PCs from the Administrator console, as well as how end users can wake their own PCs.

You can change wake settings for a specific policy, or you can set new policy default wake settings.

To change the settings that all new policies created will inherit:

- On the Configure menu, click **Policy Defaults**, and then click the **Wake Settings** tab.

To change the settings for a specific policy:

1. In the Administrator console, on the Surveyor menu , click **Policies**.
2. Select that policy in the list, and then click the **Wake Settings** tab in the main content section and change the settings as needed.



Note: The setting **Don't change** means to use whatever is set in the operating system or hardware for this action.

Basic Settings (Windows Clients Only)

These settings affect how end users can wake their computers from a sleep state.

- **Wake on mouse movement and Wake on keyboard press:** These are enabled by default, so that users can move the mouse or press a key on the keyboard to wake their computers.
- **Require password on wake:** Enable this setting to add a layer of security to waking on mouse movement or keyboard press.

Advanced Settings (Windows Clients Only)

Turn on display on wake	Turns on the monitor when a wake request is sent through Wake on LAN or policy schedule change.
Wake enable USB	Enable this for USB mouse or other pointing devices.
Allow suspend with remote user	Use this and you wish to change the default behavior in Surveyor that keeps remote sessions always on. If this setting is enabled, the computer is able to transition to a low power state according to the scheme set for it, while the user is logged in from another location but is not active on the computer. If this setting is not enabled (default), the computer remains on while the user is logged in, regardless of activity.


Wake on WAN Settings (Windows and Mac Clients)

The three settings in this section correspond to Windows network card settings, with the third setting (Wake on magic packet) also applying to Mac computers. All three essentially work together to enable Surveyor clients to wake through a Wake on LAN magic packet.

All of these settings are enabled by default, to enable the Surveyor Wake on WAN feature. For information, see *About Wake on WAN on page 1-4*. If you do not want to use Wake on WAN, select **Disable all settings**.

Set a Client to be a Preferred Wake on WAN Proxy

If you enable Wake on WAN, you might also want to designate particular clients that Surveyor will check first when it needs to select a new Wake on WAN proxy. These steps show you how to do that.

1. In the Administrator console, on the Surveyor menu , click **Computers**, and then click a group to view the devices assigned to that group.

Or, in the Administrator console, click the **Search** button  and filter the device view.

Configure the search filters to match the attributes of the computers that you want to set as preferred proxies, or that you want to set to never be selected as a proxy.




Note: For tips and more information, see *How Surveyor Elects Wake on WAN Proxies* on page 3-8.

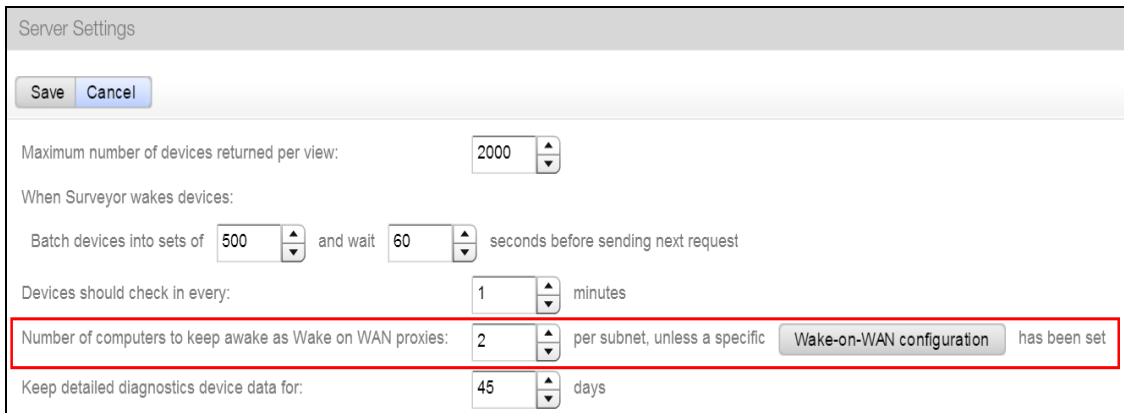
2. Select one or more of the computers in the device list, and then from the **Item Actions** menu, click **Edit Device Properties**.
3. In the Edit Device Properties dialog box, select the **Wake on WAN proxy preference** check box, and then select the setting that you want for the selected computers.
 - **Preferred** increases the ranking of the selected computers in the proxy-selection criteria.
 - **Never** prevents the selected computers from being selected as proxies.
 - **Default** means that other computer attributes will be used as selection criteria, and these computers are selected only if there are no preferred proxies available.

Set the Number of Wake on WAN Proxies Per Broadcast Domain

By default, Surveyor designates two Wake on WAN proxies per broadcast domain, a primary and secondary. You can use the server settings page to change the number assigned within each broadcast domain.

This information assumes that you are familiar with Wake on WAN, and it applies only to policies in which you enabled this feature. For more information, see *About Wake on WAN on page 1-4*.

1. In the Surveyor Administrator console, on the Configure menu , click **System Settings**.
2. Under **Server Settings**, use the arrows or enter a value for **Number of computers to keep awake as Wake on WAN proxies**.



Server Settings

Save Cancel

Maximum number of devices returned per view: 2000

When Surveyor wakes devices:

Batch devices into sets of 500 and wait 60 seconds before sending next request

Devices should check in every: 1 minutes

Number of computers to keep awake as Wake on WAN proxies: 2 per subnet, unless a specific **Wake-on-WAN configuration** has been set


Keep detailed diagnostics device data for: 45 days



Note: Two proxies per broadcast domain is the recommended minimum. This ensures that a secondary proxy can take over if the primary proxy becomes unavailable. If your environment includes broadcast domains with fewer than six devices, work with a professional services consultant to determine the best settings for your environment.

3. If you increase the number of proxies per broadcast domain, save the new settings. You do not need to complete the remaining steps. Surveyor selects the additional proxies based on its built-in selection criteria, as well as Preferred Proxy settings that you can set on individual clients.

If you reduce the number of proxies, complete the remaining steps to change the settings on the clients that you want to clear of proxy status.

4. In the Administrator console, click the **Search** button .
5. On the Search tab, use the **By Subnets** filter and specify the subnets to display.

6. In the device view, make sure the **Wake on WAN Proxy** column is displayed.

If it isn't, click **Customize View**, and select it on the **Troubleshooting** tab. After you display the column, you can drag it to the left, so you don't have to scroll to see it.

7. Click the Wake on WAN Proxy column heading once or twice to sort the display with the proxies listed at the top.
8. Determine which of the proxies you want to run as standard devices (that is, transition to low power states according to policies assigned to them). Select them, and on the **Item Actions** drop-down menu, click **Edit Device Properties**.
9. For **Preferred Wake on WAN proxy**, select **Never**.

After you change the setting, a polling interval set on proxies can take them up to 15 minutes to receive the change from the server.

10. When all of the devices you selected are cleared of proxy status, you can then set the **Preferred Wake on WAN proxy** setting on any of them to **Preferred** or **Default**, so that they can be returned to the pool of devices that are available for proxy selection.

For information about preferred Wake on WAN proxy settings, see *Set a Client to be a Preferred Wake on WAN Proxy* on page 3-5.

Also see: *Configure Specific Networks for Wake on WAN* on page 3-9 and *Configure Wake on WAN for Subnet-directed Broadcasts* on page 3-16.

How Surveyor Elects Wake on WAN Proxies

Surveyor uses a built-in selection criteria for selecting new proxies. This helps you determine which devices to set as preferred proxies or to never be proxies.

Device Ranking for Proxy Selection

In the Administrator console, you can specify Wake on WAN proxy preference for devices in the device properties (right-click selected devices and choose Device Properties).

When the Surveyor server detects that it needs to select a new Wake on WAN proxy for a broadcast domain, it uses this preference setting along with other criteria to determine which device to select. It does so in the following order of preference:

1. Devices with the **Wake on WAN proxy preference** setting of **Preferred**.
2. Devices with a **Wake on WAN proxy preference** setting of **Default** if the device is not a laptop.
3. Laptops with a **Wake on WAN proxy preference** setting of **Default**.

The server runs through a series of additional checks to determine whether the computer meets other requirements for relaying data packets. For example, it confirms that the device's network card, IP address, and subnet mask are set properly for Wake on LAN within its broadcast domain.



Note: If a new device joins a broadcast domain, and it has a higher preference ranking than an existing proxy, Surveyor will un-assign the existing proxy and select the new device in its place.

Determining which Devices to Set as Preferred Proxies

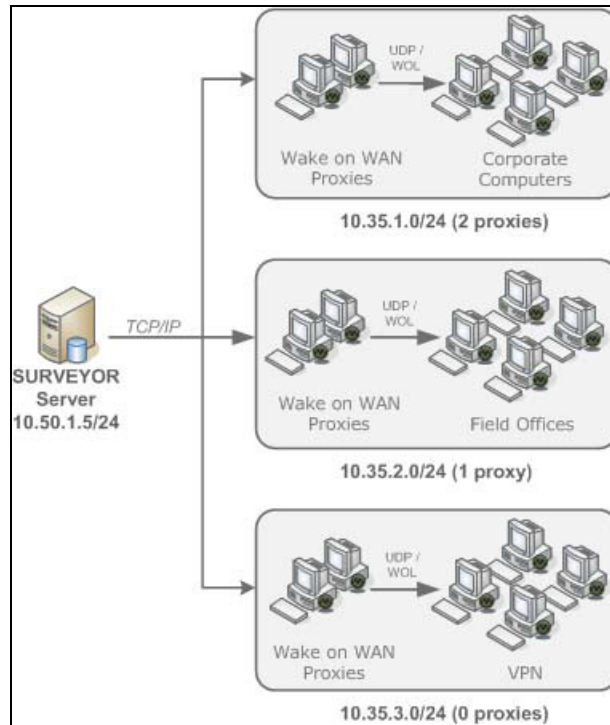
Wake on WAN proxies remain on at all times. Therefore, some devices are more appropriate than others to serve as proxies. For example, devices that need to be on 24/7 to serve critical functions are good candidates to set as preferred proxies.

On the other hand, laptops tend to be moved around frequently, so it's better to set as many laptops as you can to never be preferred proxies, and leave the remaining laptops in the default setting.


Beyond these two suggestions, the best practice is to leave most devices with the **Wake on WAN proxy preference** setting of **Default**, and allow Surveyor to use its built-in criteria to select new proxies as needed.

Configure Specific Networks for Wake on WAN

Surveyor uses IP network number clustering and assumes that computers within the same IP network number can broadcast Wake on LAN packets to each other. You can specify the subnets on which Surveyor maintains proxies, and also the number of proxies per subnet.



Two proxies per broadcast domain is the recommended minimum. This ensures that a secondary proxy can take over if the primary proxy becomes unavailable. However, for a network where you don't want any computers to wake from Off or Sleep, set the proxy count for that network address to 0 proxies. If your environment includes broadcast domains with fewer than six devices, work with a professional services consultant to determine the best settings for your environment.

1. In the Surveyor Administrator console, on the Configure menu , click **System Settings**, and then click **Wake-on-WAN Configuration**.

Server Settings

Maximum number of devices returned per view:

When Surveyor wakes devices:

Batch devices into sets of and wait seconds before sending next request

Devices should check in every: minutes

Number of computers to keep awake as Wake on WAN proxies: per subnet, unless a specific has been set

Keep detailed diagnostics device data for: days

2. In the **Wake-on-WAN Configuration** dialog box, click **Add**.
3. For **Address block**, type the network address of the subnet and the number of proxies to be kept awake per subnet.

Address block	Proxies	Broadcast networks	Subnet-directed	Description
10.35.1.0/24	2		No	Corporate Computers at HQ
10.35.2.0/24	1		No	Field Offices

For any block of IP addresses, you can configure:

- How many WOW Proxies will be kept awake in each subnet within the block.
- How and where Wake-on-LAN packets will be sent to awaken computers.


A single Address Block in Wake-on-WAN Configuration can span many subnets. For example: to configure all the subnets starting with 10.10.*, you can use the address block 10.10.0.0/16.

For more examples, search for "Wake-on-WAN Configuration" in the Surveyor knowledge base.

Address block: Number of proxies:

Use subnet-directed broadcast

Additional broadcast networks (comma-separated):

Description: 



Note: Address blocks can be entered as either IP address and netmask pairs (such as 192.168.10.0 255.255.255.0) or by using CIDR notation (such as 192.168.10.0/24).


4. Type a **Description** to help you identify the network and its Wake on WAN settings.
5. Click **Save**.

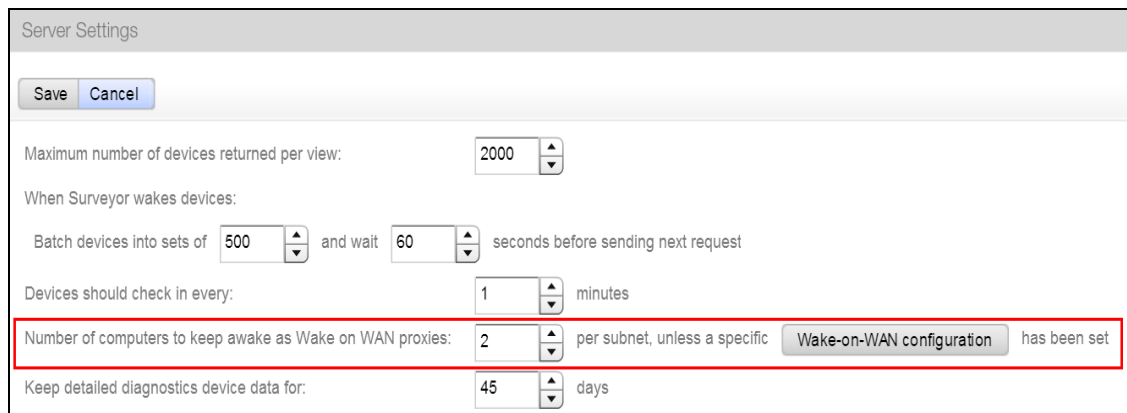
Override the Default Number of Wake on WAN Proxies on a Network

Surveyor auto-elects two Windows or Mac clients on each subnet to serve as primary and secondary Wake on WAN proxies. However, you can specify the number of proxies that Surveyor maintains for each subnet.

You can select as many proxies as you want per subnet (or even specify zero proxies for subnets on which you don't ever want to wake computers). However, best practice is to designate at least two.

For a network where you don't want any computers to wake from Off or Sleep, set the proxy count for that network address to 0 proxies.

1. In the Surveyor Administrator console, on the Configure menu , click **System Settings**, and then click **Wake-on-WAN Configuration**.



Server Settings

Save Cancel

Maximum number of devices returned per view: 2000

When Surveyor wakes devices:

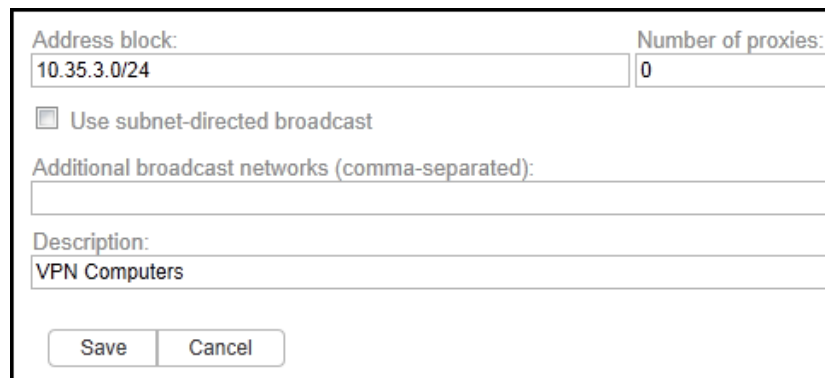
Batch devices into sets of 500 and wait 60 seconds before sending next request

Devices should check in every: 1 minutes

Number of computers to keep awake as Wake on WAN proxies: 2 per subnet, unless a specific **Wake-on-WAN configuration** has been set

Keep detailed diagnostics device data for: 45 days

2. For **Address block**, type the network address of the subnet and the number of proxies to be kept awake per subnet.



Address block: 10.35.3.0/24

Number of proxies: 0

Use subnet-directed broadcast

Additional broadcast networks (comma-separated):

Description: VPN Computers

Save Cancel



Note: Address blocks can be entered as either IP address and netmask pairs (such as 192.168.10.0 255.255.255.0) or by using CIDR notation (such as 192.168.10.0/24).

3. Type a **Description** to help you identify the network and its Wake on WAN settings.
4. Click **Save**.

About Wake on WAN and Port-based Network Access Control

Port-based network access control (PNAC) can be configured on some types of network switches to require Ethernet devices to send credentials before being allowed to connect to an authorized network.

For example, an organization using PNAC may configure the network so that a system using Windows Domain user accounts will automatically be allowed access to the internal network, but computers that are not part of the Windows Domain are prevented from sending or receiving network traffic.

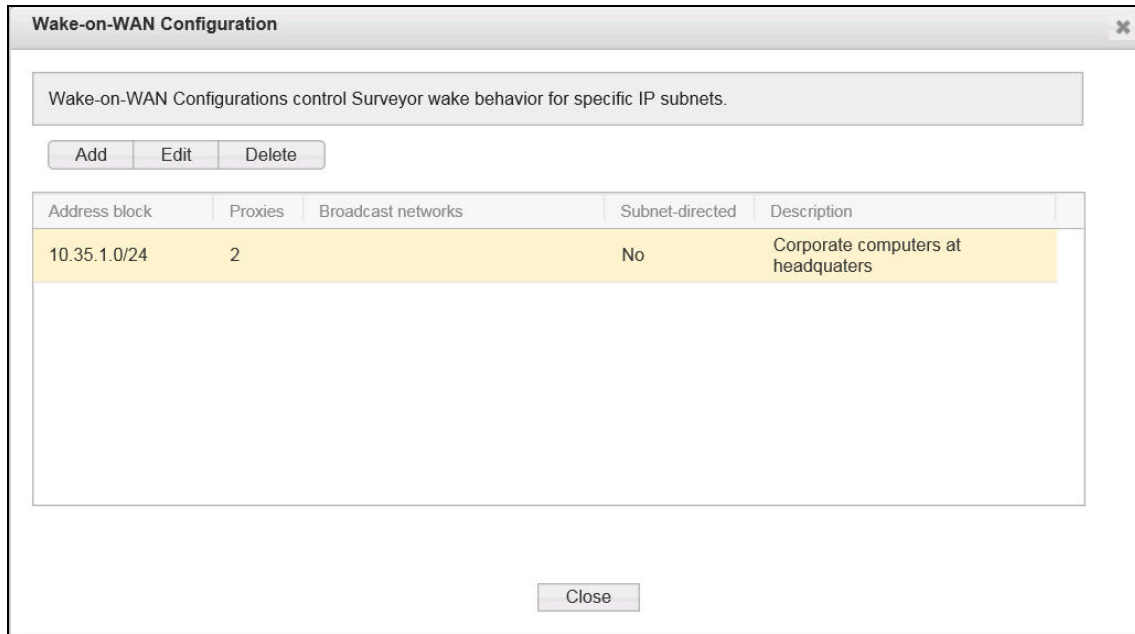
Where PNAC is used, computers in Sleep mode are removed from an authorized network and placed into another, unauthorized network by the network switch. By default, when the Surveyor server is asked to wake sleeping machines using Wake on WAN, the Surveyor server will try to wake computers by sending Wake on LAN (WOL) packets to Wake on WAN proxy computer in the last authorized network from which the proxy computer connected to Surveyor. Because the sleeping computer has been moved to another network by the network switches, the WOL packet never reaches the sleeping computer and it does not awaken.

To wake computers in networks that use PNAC, you can configure Wake on WAN in Surveyor to send subnet-directed broadcasts to specific network addresses. For networks that use port-based network access control (PNAC), you can associate a specific subnet with broadcast networks that will be used for Wake on WAN to wake computers when sleeping computers move from an authenticated network to a different, unauthenticated network. Additional broadcast networks are especially useful where 802.1x network security is deployed and devices change networks when they are turned off or sleeping.

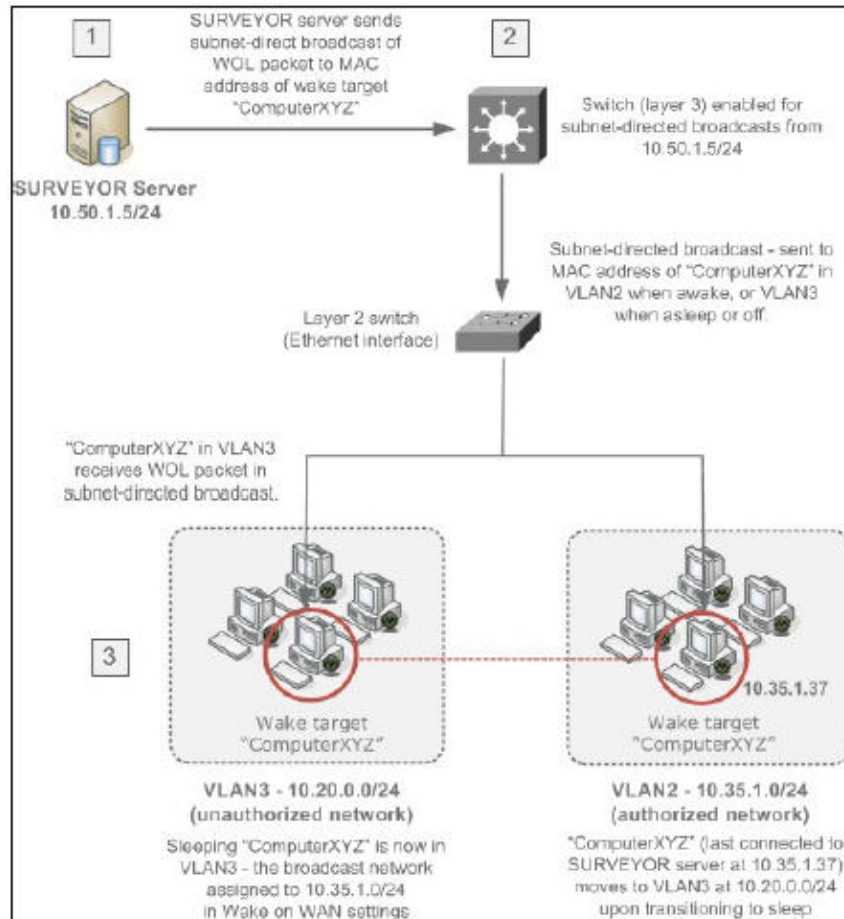
In addition to sending wake packets on the subnet where each device was last detected, Surveyor will send wake packets to each network in the list of additional broadcast networks. Additional broadcast networks can be entered in either IP address and netmask pairs (such as 192.168.10.0 255.255.255.0) or using CIDR notation (such as 192.168.10.0/24).

Subnet-directed Broadcasts from Surveyor

Surveyor Wake on WAN includes settings for specifying a network and associated broadcast networks that can receive WOL packets through subnet-directed broadcasts.



For networks that use port-based network access control (PNAC), you can specify broadcast networks that Surveyor will use to wake computers when sleeping computers move from an authorized network to a different, unauthorized network.



Note: Switches for the networks that you specify as additional broadcast networks must be configured to receive subnet-directed broadcasts from the Surveyor server. See your switch manufacturer documentation for details.

In a network that uses PNAC, the Wake on LAN packet is handled in the following way:

1. The wake target falls asleep and moves from VLAN2 to VLAN3.
2. Wake request is sent to the server from the Administrator console (on schedule through power scheme or on demand by administrator).
3. Surveyor server receives request and sends a subnet-directed broadcast of a Wake on LAN (WOL) magic packet to the master switch (enabled to receive subnet-directed broadcasts specifically from that server address). The WOL packet contains the MAC address of the target client.
4. The wake target receives the WOL packet in VLAN3 and wakes.

Configure Wake on WAN for Subnet-directed Broadcasts

Use network-specific configurations in Wake on WAN to override the default proxy count or configure networks for subnet-directed broadcasts.

For each network with Surveyor clients. Network-specific configurations in Wake on WAN give you more control over the subnets that should receive Wake on LAN packets from Surveyor server. You can also specify the number of proxies for each subnet.




Note: By default, Wake on WAN proxies are not enabled when you first start Surveyor for baseline data collection. After the baseline period is over, it is recommended that you set the proxy number to 2 per subnet.

For networks that use port-based network access control (PNAC), you can associate a specific subnet with broadcast networks that will be used for Wake on WAN to wake computers when sleeping computers move from an authenticated network to a different, unauthenticated network. In addition to sending wake packets on the subnet where each device was last detected, Surveyor will send wake packets to each network in the list of additional broadcast networks. See the topic About Wake on WAN and port-based network access control on page 34 for other details.



Note: Additional broadcast networks are especially useful where 802.1x network security is deployed and devices change networks when they are turned off or sleeping.

! Important: Switches for the networks that you specify as additional broadcast networks must be configured to receive subnet-directed broadcasts from the Surveyor server. See your switch manufacturer documentation for details.

1. In the Surveyor Administrator console, on the Configure menu , click **System Settings**, and then click **Wake-on-WAN Configuration**.

Server Settings

Maximum number of devices returned per view:

When Surveyor wakes devices:

Batch devices into sets of and wait seconds before sending next request

Devices should check in every: minutes

Number of computers to keep awake as Wake on WAN proxies: per subnet, unless a specific has been set

Keep detailed diagnostics device data for: days

2. In the **Wake-on-WAN Configuration** dialog box, select an existing address block entry, and then click **Edit**. Or click **Add** to create a new entry.
3. Select the option **Use subnet-directed broadcast**.
4. For **Address block**, type the network address of the subnet and the number of proxies to be kept awake per subnet (if you are not already editing an existing subnet).



Note: Address blocks can be entered as either IP address and netmask pairs (such as 192.168.10.0 255.255.255.0) or by using CIDR notation (such as 192.168.10.0/24).

5. For **Additional broadcast networks**, type the address block (comma-separated) for each broadcast network that should receive the wake packet for this particular subnet.

Wake-on-WAN Configuration ✕

Wake-on-WAN Configurations control Surveyor wake behavior for specific IP subnets.

Address block	Proxies	Broadcast networks	Subnet-directed	Description
10.35.1.0/24	2		Yes	Corporate computers of headquarters

For any block of IP addresses, you can configure:

- How many WOW Proxies will be kept awake in each subnet within the block.
- How and where Wake-on-LAN packets will be sent to awaken computers.

A single Address Block in Wake-on-WAN Configuration can span many subnets. For example: to configure all the subnets starting with 10.10.*, you can use the address block 10.10.0.0/16.

For more examples, search for "Wake-on-WAN Configuration" in the Surveyor knowledge base.

Address block: x Number of proxies:

Use subnet-directed broadcast

Additional broadcast networks (comma-separated):

Description:

6. Type or edit the **Description** to help you identify the network and its Wake on WAN settings.
7. Click **Save**.

4

Enabling Wake on LAN

Table 4-1 In this Chapter

Topics
<i>Manually Configure the NIC for Wake on LAN (Windows Only)</i>
<i>Manually Configure the BIOS for Wake on LAN (Windows Only)</i>
<i>Configure Wake on Demand on a Mac OS X Computer</i>
<i>Remotely Enable Wake on LAN BIOS Settings for Dell Computers</i>
<i>Remotely Enable Wake on LAN BIOS Settings for HP Computers</i>
<i>Remotely Enable Wake on LAN BIOS Settings for Other Computers</i>

Manually Configure the NIC for Wake on LAN (Windows Only)

To use the Wake on LAN technology, you may need to enable settings on the computer, whether in a network card, BIOS, or system settings. This section describes how to configure these settings manually and remotely.

1. In the Control Panel, open the network card's dialog box.

On Windows Vista:

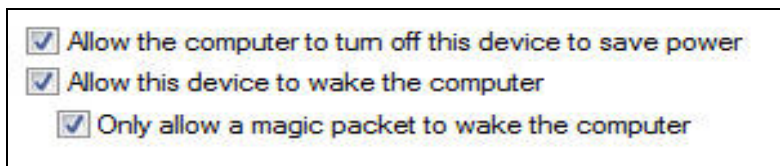
- a. In the Windows Control Panel, open **Network Connections**, right-click the connection that the computer uses, and choose **Properties**.
- b. On the General tab, click **Configure**.

On Windows 7, Windows 8 and Windows 10:

- a. In the Windows Control Panel, open **Network and Internet > Network and Sharing Center > Change Adapter Settings**.
 - b. Right-click the connection that the computer uses, and choose **Properties**.
 - c. On the **Networking** tab, click **Configure**.
2. On the **Power Management** tab (or **Advanced** tab, depending on the driver) of the network card's dialog box, look for Wake on LAN settings such as the following

Property	Value
Wake From Shutdown (or power off state)	Enabled or On
Wake-Up Capabilities or Wake on LAN	Magic Packet or Enabled (depending on the choice)

3. Also look for and enable settings such as the following, which allow management systems to initiate power state changes.



Tip: When clients do not stay in a low power state because network traffic wakes them up, selecting **Only allow management stations to bring the computer out of standby** resolves the problem.



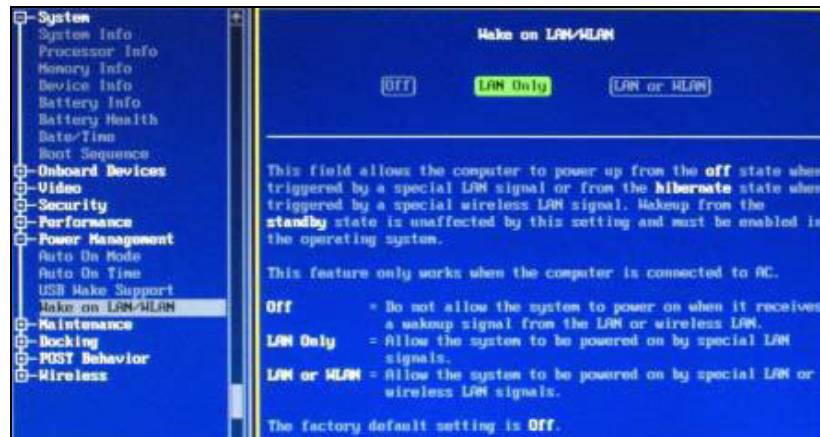
Note:

- If you update the NIC driver, the settings you change in this procedure may revert back to their defaults, which can prevent the client from following Surveyor power management policies. Be sure to check these settings any time you update the NIC driver.
 - If you use a Dell Optiplex computer, see the Verdiem Knowledge Base article [Dell Optiplex computers do not wake from off using default Wake on LAN settings](#).
-

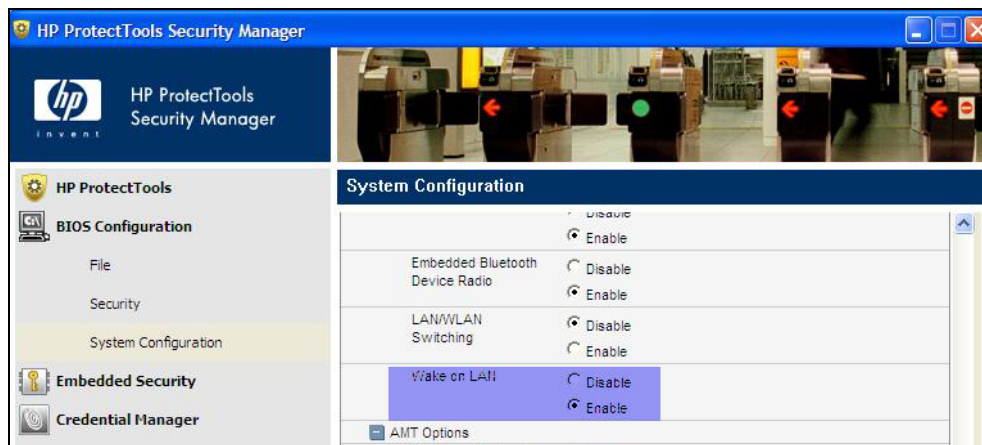
Manually Configure the BIOS for Wake on LAN (Windows Only)

1. Restart the computer.
2. During the startup process, press the keyboard key indicated to enter the BIOS settings. This option appears before Windows starts, and it can vary among computer vendors.
3. When you have access to the BIOS settings, look for the settings related to devices waking the computer, and enable these devices. For specific settings, refer to the hardware documentation.

Example of Wake on LAN BIOS settings on a Dell computer.



Example of Wake on LAN BIOS settings on an HP computer.



Configure Wake on Demand on a Mac OS X Computer

This topic contains basic steps for enabling Wake on Demand. It also provides a link to a recommended Apple Support article for OS X v10.6 computers. For best results, use the information here alongside the specified support article.

1. Open the **System Preferences**, and then open the **Energy Saver** pane.
2. Click **Options**, and then select the check box that enables waking for network access.

The specific text that you see for the check box indicates the capabilities of the Mac:

Check Box Text	Indicates the Mac supports Wake on Demand over
Wake for network access	Both Ethernet and AirPort
Wake for Ethernet network access	Ethernet only
Wake for AirPort network access	AirPort only



Note: On computers older than v10.6, the text might show **Wake for Ethernet network administrator access**, wake support is not as extensive as with Wake on Demand.

3. For further instructions, see the following article on the Apple Support site:
 - [About Wake on Demand](#)

This article describes how the Wake on Demand service works and lists its key features. It also contains complete instructions for setting up Wake on Demand, with additional information for waking from a Windows computer, waking portable computers, and waking over wireless networks.



Note: Mac OS X does not support Wake on WAN/LAN from the off state (only from sleep). For details, see .

Remotely Enable Wake on LAN BIOS Settings for Dell Computers

Instead of manually enabling the Wake on LAN BIOS settings, you can use the Dell Client configuration Utility (DCCU) to update your Dell computers remotely.

See the following pages on the Dell TechCenter for details:

- [Configuring the BIOS using the Dell Client Configuration Utility \(DCCU\)](#)



Note: The installation of the DCCU requires the Microsoft .NET Framework.

- [Dell Client Configuration Toolkit - CCTK](#)
- [OpenManage Client Instrumentation \(OMCI\)](#)

OMCI Overview

The Dell OpenManage Client Instrumentation (OMCI) software enables OptiPlex, Dell Precision, and Latitude computers to be managed remotely.

OMCI is based on the Common Information Model (CIM), which is a systems management protocol defined by the Distributed Management Task Force (DMTF), an industry-recognized standards body.

When OMCI is installed on the Dell client computers, you can enable remote management application programs to access information about the client computers, manage assets, or monitor the status. For example, you can collect system information such as the BIOS, CMOS, System Management BIOS (SMBIOS), operating system, APIs, DLLs, and registry settings. OMCI exposes this information through enterprise management consoles that support industry standards, and through Dell OpenManage products such as IT Assistant and OpenManage Client Connector.

With OMCI installed, you can then run the script from Surveyor to remotely enable the Wake on LAN BIOS settings on the Dell client computers.

Additional Information

For a list of Dell models that support OMCI, see the readme file located in the OMCI installation directory. The default installation path for a typical installation of OMCI is `C:\Program Files\Dell\OpenManage\Client`.

For information about OMCI, see the *OMCI White Paper* and the *OMCI User's Guide* on the [OpenManage Client Instrumentation \(OMCI\)](#) page.

Install OMCI

Install OMCI on the Dell computers that you want to remotely enable for Wake on LAN. OMCI can be installed locally using the installation wizard, or remotely using a silent or administrative installation.

Download the most recent OMCI version from the [OpenManage Client Instrumentation \(OMCI\)](#) page.

You can install OMCI using one of the following ways:

- **Local installation:** Use the installation wizard to install OMCI on a Dell client computer. You can install the complete package or select a custom set of components.
- **Silent installation:** Incorporate a series of command-line switches, provided by OMCI, to remotely install the product using an electronic software distribution tool without end user interaction.
- **Administrative installation:** Deploy OMCI to client computers using a desktop management system, such as Microsoft System Center Configuration Manager.

For information, see the OMCI User's Guide available through the [OpenManage Client Instrumentation \(OMCI\)](#) page.

Remotely Enable Wake on LAN BIOS Settings for HP Computers

You can remotely update the Wake on LAN BIOS settings on your HP computers using a Windows-based BIOS configuration utility from HP's System Software Manager (SSM).

The BIOS utility, **BiosConfigUtility.exe**, is a command-line utility. It can be deployed independent of SSM. When used together with a configuration text file, you can remotely enable Wake on LAN settings on your HP computers.

Check the HP System Software Manager website (www.hp.com/go/ssm) for the latest version.

You will need to prepare the configuration text file that contains the Wake on LAN settings for your HP models. The following sections describe how to:

- Get the BIOS configurations from your HP models.
- Create a master configuration file with only the Wake on LAN settings.
- Apply the Wake on LAN settings to the HP computers in your organization.

BIOS configuration is supported on most high-end commercial HP computers. For a list of supported computers, see the HP SSM "Release Notes" on the HP System Software Manager website (www.hp.com/go/ssm).

Remotely Enable Wake on LAN BIOS Settings for Other Computers

Fujitsu - Siemens and Lenovo (IBM) offer the solutions described here. To learn how to remotely update the Wake on LAN BIOS settings on computers other than Dell or HP, contact the hardware vendor.

Fujitsu - Siemens

- [DeskView Instant - BIOS Management](#), which includes a utility called **BIOSSET.exe**.
- [DeskView Instant drivers](#)

Lenovo (IBM)

- [IBM Systems Director](#) and the [Remote Deployment Manager](#) (RDM) extension, with deployment agents similar to Configuration Manager.

Other Vendors

To learn how to remotely update the BIOS settings on other computers, such as Toshiba, Sony, and Acer, contact the hardware vendor.

Contacting Apteian Technical Support

After your deployment process is complete, you can visit the Apteian Technical Support portal to submit and track any issues you have with your Surveyor implementation.

The Support portal also gives you access to the Apteian Knowledge Base, which contains articles for troubleshooting, best practices, and other information about customizing your product configurations.

For Technical Support contact information or to log on to the portal, visit the [Support page on apteian.com](#).

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