



Cisco EnergyWise IOS Configuration Guide

EnergyWise Version 2.7
May 2012

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Text Part Number: OL-19806-04

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

Cisco EnergyWise Configuration Guide

© 2009–2011 Cisco Systems, Inc. All rights reserved.



CONTENTS

Preface vii

- Conventions vii
- Filtering **show** Command Output viii
- Related Publications ix
- Obtaining Documentation and Support on the Cisco Developer Network x
- Obtaining Documentation, Support, and Security Guidelines x

CHAPTER 1

Understanding Cisco EnergyWise 1-1

- Concepts 1-2
 - EnergyWise Domain 1-2
 - Power Level 1-3
 - Attributes 1-4
 - Recurrences 1-4
 - Security 1-4
 - MIBs 1-5
- Overview 1-6

CHAPTER 2

Configuring EnergyWise 2-1

- Configuration Guidelines 2-2
 - Enabling EnergyWise and Powering Devices 2-2
 - Recurrences 2-2
 - Time Format and Time Zone 2-2
 - Day of the Month and Day of the Week Recurrences 2-3
 - PoE and EnergyWise Interactions 2-3
 - CLI Compatibility 2-4
- Manually Managing Power 2-5
 - Enabling EnergyWise 2-5
 - Configuring Domain Member or Endpoint Attributes 2-6
 - Powering the PoE Port 2-8
 - Configuring Port Attributes 2-8
- Configuring Recurrences 2-10
- Using Activity Check 2-12
 - Prerequisites 2-12
 - Testing Activity Check 2-13

- Configuration Examples 2-15
 - Setting the Domain 2-15
 - Manually Managing Power 2-15
 - Automatically Managing Power 2-16
- Queries 2-18
 - Using Queries to Manage Power in the Domain 2-19
 - Query Examples 2-22
 - Querying to Analyze Domains 2-22
 - Querying with the Name Attribute 2-22
 - Querying with Keywords 2-23
 - Querying to Set Power Levels 2-23
- Wake on LAN 2-24
 - Understanding Wake on LAN 2-24
 - WoL with Cisco EnergyWise 2-24
 - Configuring WoL 2-25
- Disabling EnergyWise 2-27

CHAPTER 3

EnergyWise CLI Commands 3-1

- clear energywise 3-2
- debug energywise 3-4
- energywise (global configuration) 3-6
- energywise (interface configuration) 3-10
- energywise domain 3-14
- energywise query 3-17
- snmp-server enable traps energywise 3-22
- show energywise 3-24

CHAPTER 4

Troubleshooting EnergyWise 4-1

- Using CLI Commands 4-1
- Verifying the Power Usage 4-2
- Detecting Communication Failures 4-2

APPENDIX A	Cisco EnergyWise and Catalyst 4500 Switches	A-1
APPENDIX B	Cisco EnergyWise and Catalyst 6500 Switches	B-1
APPENDIX C	Important Notice	C-1
	Disclaimer	C-1
	Statement 361—VoIP and Emergency Calling Services do not Function if Power Fails	C-1
	Statement 1071—Warning Definition	C-3



Preface

This document describes how to configure Cisco EnergyWise in your network.

This guide does not describe how to install your network device. For information, see the hardware installation guide for your device.

For information about the Cisco IOS Release 12.2 commands, see the Cisco IOS documentation set on Cisco.com.

This guide does not provide detailed information on the GUIs for the embedded device manager or for Cisco Network Assistant (hereafter referred to as *Network Assistant*) that you can use to manage the domain member. However, the concepts in this guide are applicable for the GUI user. For information about the device manager, see the domain member online help. For information about Network Assistant, see *Getting Started with Cisco Network Assistant*, available on Cisco.com.

This document does not provide specific information for the management application programming interface (MAPI)- and endpoint software development kit (SDK). For more information, see the *Cisco EnergyWise Documentation Roadmap*, *Cisco EnergyWise Partner Development Guide*, *Cisco EnergyWise Programmer Reference Guide for the Management API*, and the *Cisco EnergyWise Programmer Reference Guide for the Endpoint SDK* on the Cisco Developer Network: <http://developer.cisco.com/web/esdk/home>.

For the supported device list, see the release notes on Cisco.com.

Conventions

This publication uses these conventions to convey instructions and information:

For command descriptions

- Commands and keywords are in **boldface** text.
- Arguments for which you supply values are in *italic*.
- Square brackets ([]) mean optional elements.
- Braces ({ }) group required choices, and vertical bars (|) separate the alternative elements.
- Braces and vertical bars within square brackets ({ | }) mean a required choice within an optional element.

For interactive examples

- Terminal sessions and system displays are in *screen* font.
- Information that you enter is in **boldface screen** font.
- Nonprinting characters, such as passwords or tabs, are in angle brackets (<>).

Notes, cautions, and warnings use these conventions and symbols:



Note

Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.



Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.



Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Filtering show Command Output

The **show** commands have optional output modifiers to filter the command output.

- | **begin**—Display begins with the line that matches the *expression*.
- | **exclude**—Display excludes with the line that matches the *expression*.
- | **include**—Display includes with the line that matches the *expression*.
- *expression*—Expression in the output to use as a reference point.

Expressions are case sensitive. If you enter | **exclude output**, the lines that contain *output* are not displayed, but the lines that contain *Output* are displayed.

Related Publications

For information about the Cisco network devices, see

- *Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Version 2.7* on Cisco.com
- *Configuring Cisco EnergyWise Feature for Branch Routers*:
http://www.cisco.com/en/US/docs/routers/access/1900/software/configuration/guide/enrgyz_artg.html
- Documentation for the software release running on your device on Cisco.com:
<http://www.cisco.com/cisco/web/support/index.html>.
- IP-Enabled Energy Management:
<http://www.wiley.com/WileyCDA/WileyTitle/productCd-0470607254,miniSiteCd-SYBEX.html>

**Note**

Before installing, configuring, or upgrading the switch, router, or other Cisco device, see these documents:

- For initial configuration information, see the “Using Express Setup” section in the getting started guide or the “Configuring the Switch with the CLI-Based Setup Program” appendix in the hardware installation guide.
- For device manager requirements, see the “System Requirements” section in the release notes (not orderable but available on Cisco.com).
- For Network Assistant requirements, see the *Getting Started with Cisco Network Assistant* (not orderable but available on Cisco.com).
- For cluster requirements, see the *Release Notes for Cisco Network Assistant* (not orderable but available on Cisco.com).
- For upgrading information, see the “Downloading Software” section in the release notes.

For information about the Cisco EnergyWise partner documentation, go to the Cisco Developer Network:

<http://developer.cisco.com/web/esdk/home>.

- *Cisco EnergyWise Documentation Roadmap*
- *Cisco EnergyWise Partner Development Guide*
- *Cisco EnergyWise Programmer Reference Guide for the Endpoint SDK*
- *Cisco EnergyWise Programmer Reference Guide for the Management API*
- *Cisco IOS Release Notes for the Cisco EnergyWise Configuration Guide, EnergyWise Version 2.7*

Obtaining Documentation and Support on the Cisco Developer Network

Cisco EnergyWise development partners can access the EnergyWise documents, MAPI and SDK software code, and Cisco IOS software by joining the Cisco Developer Network:

<http://developer.cisco.com/web/esdk/home>.

You need a support contract and license to access EnergyWise resources on the Cisco Developer Network and on TAC. The business development manager who registered your licence must set up your Cisco.com account with the appropriate access privileges.

The forum, wiki, and other resources on the Cisco Developer Network provide a self-help knowledge base and community for EnergyWise application developers and programmers. You can get additional support by opening a case in the TAC Service Request Tool:

<http://tools.cisco.com/ServiceRequestTool/create/launch.do>.

Obtaining Documentation, Support, and Security Guidelines

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed, and set content to be delivered directly to your desktop by a reader application. The RSS feeds are a free service, and Cisco supports RSS version 2.0.



CHAPTER 1

Understanding Cisco EnergyWise

- [Concepts, page 1-2](#)
- [Overview, page 1-6](#)



Note

If your switch is stacking-capable (for example, a Catalyst 3750-X, 3750-E, or 3750), the term *switch* refers to both a standalone switch and a switch stack unless otherwise noted.

For a list of Cisco network devices supporting Cisco EnergyWise, see the *Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Version 2.7* on Cisco.com.

For Cisco Integrated Service Routers Generation 2 (ISR G2), see the *Configuring Cisco EnergyWise Feature for Branch Routers*:

http://www.cisco.com/en/US/docs/routers/access/1900/software/configuration/guide/enrgyz_artg.html

See Cisco EnergyWise information:

http://www.cisco.com/en/US/products/ps10195/tsd_products_support_series_home.html.

See EnergyWise partner information on the Cisco Developer Network:

<http://developer.cisco.com/web/esdk/home>.



Warning

Voice over IP (VoIP) service and the emergency calling service do not function if power fails or is disrupted. After power is restored, you might have to reset or reconfigure equipment to regain access to VoIP and the emergency calling service. In the USA, this emergency number is 911. You need to be aware of the emergency number in your country

For information about this warning, see the “Important Notice” appendix.

Concepts

- [EnergyWise Domain, page 1-2](#)
- [Power Level, page 1-3](#)
- [Attributes, page 1-4](#)
- [Recurrences, page 1-4](#)
- [Security, page 1-4](#)
- [MIBs, page 1-5](#)

EnergyWise Domain

An EnergyWise domain is treated as one unit of power management. It consists of Cisco networking devices, Power over Ethernet (PoE) endpoints, and endpoints running agents built using the SDK. It is similar to a network-management community such as a VLAN Trunking Protocol (VTP) domain.

For example, if you have a building with a core router, 10 access switches, and 400 endpoints such as phones, access points, and PCs, you can create an EnergyWise domain called *MyBuilding* with the router and switches as domain members.

If you want to implement power management applications on a management station and endpoints, all the domain members must run EnergyWise Phase 2 or later.

After you enable and configure EnergyWise on the core router and access switches, the *MyBuilding* domain configures itself. Neighbor relationships are set among the domain members.

- Domain members use CDP when it is enabled or EnergyWise UDP messages to automatically discover neighbors.
- You can manually configure static neighbors.

Each domain member sets up a parent-child relationship with an attached endpoint. For example, an IP phone (child) is connected to a PoE switch (parent), or a PC (child) is connected to a router (parent).

After the domain is set, a domain member can forward queries and control messages to other domain members and endpoints.

You can:

- Use SNMP or a management station to query every domain member or endpoint.
- Run an EnergyWise query to receive or set power usage information.
- Use a management application, server, or domain member CLI to define power usage policies or receive power usage information.

Power Level

EnergyWise uses a set of power levels to manage power usage consistently. A power level is a measure of the energy consumed by devices in an EnergyWise network. The devices in an EnergyWise network can be from different manufacturers.

Table 1-1 Power Levels

Category	Level	Description
Operational	10	Full
	9	High
	8	Reduced
Standby	7	Medium
	6	Frugal
	5	Low
	4	Ready
	3	Standby
Nonoperational	2	Sleep
	1	Hibernate
	0	Shut off

The range is from 0 to 10.

The default is 10.

A Cisco switch does not support level 0. You cannot turn off the power on a switch.

A PoE endpoint, such as an IP phone, receives power from a PoE switch port.

- The power level is for the port.
- The port supports levels 0 to 10.
- If the port power level is 0, the port does not provide power to connected endpoints.
- If the power level is from 1 to 10, the port is on.

Attributes

Table 1-2 Importance, Keywords, Name, and Role

	Definition	Defaults
Importance	Device rating based on the business or deployment context.	The range is from 1 (least important) to 100 (most important). The default is 1.
Keywords	Device description (other than the name or role) for which query results are filtered.	None.
Name	Device identity for which query results are filtered.	For a PoE port, the short version of the port name. For example, Gi0.2 for Gigabit Ethernet 0/2. For a domain member, the hostname. For an endpoint, see the endpoint documentation. We recommend that you use the hostname.
Role	Device function based on the business or deployment context.	For a PoE port, the default is <i>interface</i> . For a domain member, the default can be the model number or the supervisor model number. For an endpoint, see the endpoint documentation.

Recurrences

You can configure the domain member to power an endpoint or interface on and off based on the time or date.

A recurrence uses the domain member time.

Changes to the EnergyWise power level because of a recurrence are only in the running configuration and not saved in the startup configuration.

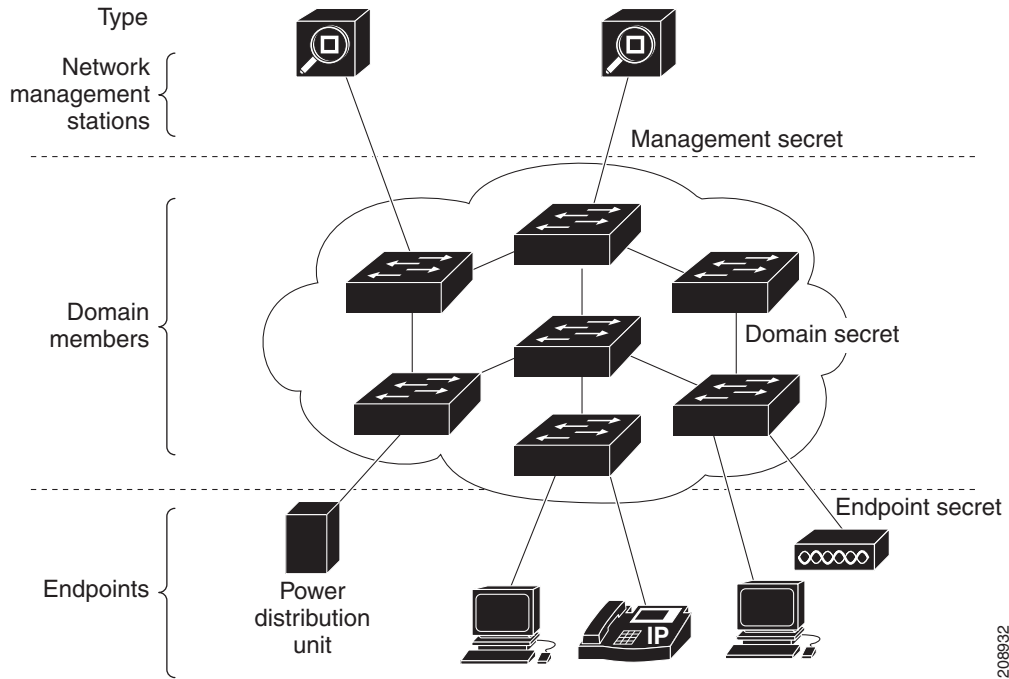
If the domain member fails and then restarts, it uses the power level in the saved startup configuration.

Security

An EnergyWise network has three levels of security to prevent unauthorized communication. It enforces security with *shared secrets*, also referred to as *passwords*.

- The management secret authenticates communication between the domain members and the management station.
- The domain secret authenticates communication between domain members.
- The endpoint secret authenticates communication between domain members and endpoints.

Figure 1-1 EnergyWise Security Levels



208932

MIBs

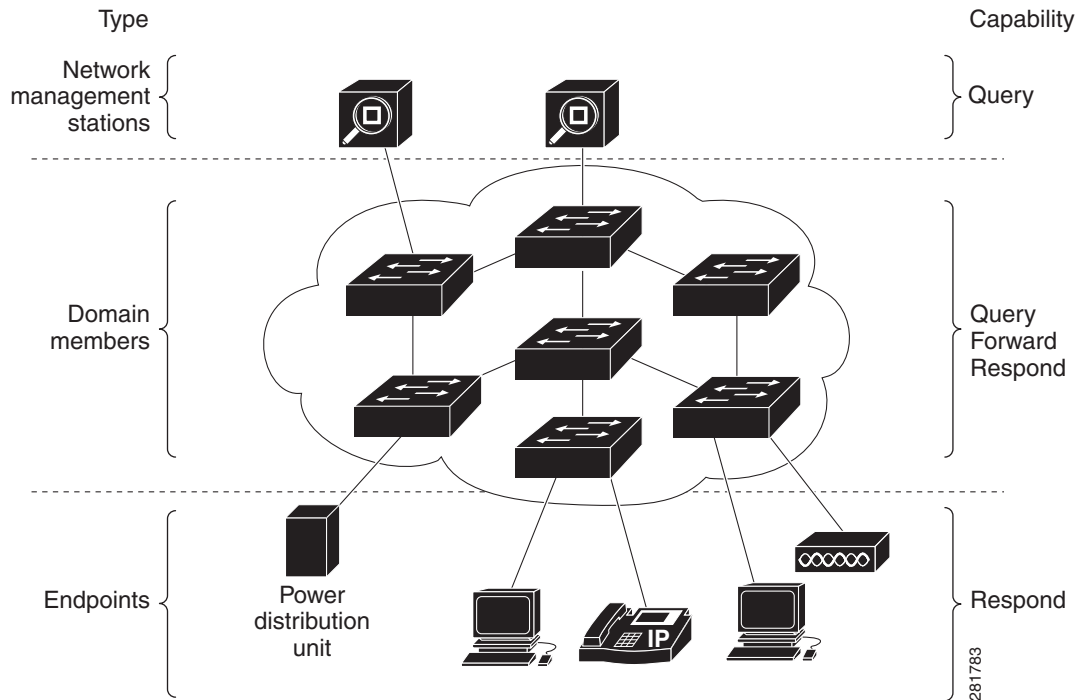
EnergyWise domain members support the CISCO-ENERGYWISE-MIB.

To locate and download MIBs for a specific Cisco product and release, use the Cisco MIB Locator: <http://cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

Overview

In a network, Cisco EnergyWise monitors and manages the power usage of network devices and devices connected to the network.

Figure 1-2 EnergyWise Network



- Management stations—Control applications and devices that use EnergyWise to monitor and manage the power usage of domain members and endpoints. Management stations also send queries.
- Domain members—Include Cisco switches, routers, and network devices. They forward messages across an EnergyWise *domain* to endpoints. They also forward and reply to queries from the management station and other domain members and aggregate power-usage information from the endpoints.
- Endpoints—Devices that are connected to a domain member and that use power. They respond to queries but do not send or forward them. You can install the software development kit (SDK) library on IP endpoints.

Domain members and endpoints receive power from an AC or DC power source or a power supply.

PoE domain members and endpoints also receive power from PoE switches or Cisco EtherSwitch service modules. For example, IP phones and access points connected to a PoE switch receive power from the switch.



CHAPTER 2

Configuring EnergyWise

- [Configuration Guidelines, page 2-2](#)
- [Manually Managing Power, page 2-5](#)
- [Configuring Recurrences, page 2-10](#)
- [Using Activity Check, page 2-12](#)
- [Configuration Examples, page 2-15](#)
- [Queries, page 2-18](#)
- [Wake on LAN, page 2-24](#)
- [Disabling EnergyWise, page 2-27](#)

Configuration Guidelines

- [Enabling EnergyWise and Powering Devices, page 2-2](#)
- [Recurrences, page 2-2](#)
- [PoE and EnergyWise Interactions, page 2-3](#)
- [CLI Compatibility, page 2-4](#)

Enabling EnergyWise and Powering Devices

By default, EnergyWise is disabled on the domain member.

If you enter the **no energywise level** interface configuration command, the domain member does not immediately change to the default power level. The power level changes when you restart the domain member or enter the **energywise level level** command.

For a domain member with PoE ports, such as a PoE-capable switch:

- When you add the domain member to a domain, EnergyWise is enabled on the domain member and all the PoE ports.
- When you use the **energywise level 0** interface configuration command, the port does not provide power to connected endpoints.
- You cannot use the **energywise level 0** global configuration command to power off the domain member.

When you use the **energywise level level** global configuration command to set the power level for a parent entity, you can only configure power level **10**. Configuring any other power level has no effect on the parent entity.

If a port is error-disabled:

- It appears as an EnergyWise domain member or endpoint in the **show** command output and in the *collect* query results. The query results show that the port uses 0 watt.
- It does not respond to a *set* query.

Recurrences

- [Time Format and Time Zone, page 2-2](#)
- [Day of the Month and Day of the Week Recurrences, page 2-3](#)

Time Format and Time Zone

For time format, use the 24-hour clock. The time zone is based on the domain member.

- To set a recurrence at a specific time, enter the **energywise level level recurrence importance importance at minute hour day_of_month month day_of_week** interface configuration command.

For example, to configure a recurrence that occurs every day at 06:34, enter the **energywise level level recurrence importance at 34 6 * * *** command.

- *minute* is 34.
- *hour* is 6.
- *day_of_month* is the wildcard (*) for every day in the month.
- *month* is the wildcard (*) for every month.
- *day_of_week* is the wildcard (*) for every day in the week.
- To set 06:34 in a time range, enter the **absolute 06:34 * * 2009** and the **periodic 06:34** interface configuration commands.

**Note**

See the *Release Notes for Cisco EnergyWise, EnergyWise Version 2.7* on Cisco.com for software releases with Cisco EnergyWise Version 2.7.

Day of the Month and Day of the Week Recurrences

When you use the *day_of_month* and the *day_of_week* in the **energywise level level recurrence importance importance at minute hour day_of_month month day_of_week** interface configuration command:

- The recurrence occurs when either the *day_of_month* or the *day_of_week* occurs first (in releases earlier than the EnergyWise Version 2.7 releases).
- If you specify both the *day_of_month* and the *day_of_week*, the event occurs when either the *day_of_month* or the *day_of_week* is first.
- If you specify the *day_of_month* and use a wildcard (*) for the *day_of_week*, the event occurs on the *day_of_month*.
- If you use a wildcard for the *day_of_month* and specify the *day_of_week*, the event occurs on the *day_of_week*.
- If you use wildcards for both the *day_of_month* and the *day_of_week*, the event occurs on any day.

PoE and EnergyWise Interactions

Table 2-1 If a Domain Member Port Participates in EnergyWise

Port	PoE Mode		
	auto	never	static
PoE	Yes	No	Yes
Non-PoE	No	No	No

If the PoE port mode is **never**, the port power is off, but EnergyWise is not disabled. You can:

- Configure EnergyWise on the port.
- Configure the port power level. Changes are effective immediately after you change the port mode to **auto** or **static**. You do not need to restart the domain member.

If EnergyWise is disabled, the domain member can use PoE to manage the port power usage.

CLI Compatibility



Note

Catalyst 6500 switches do not support EnergyWise Phase 1.

To display the EnergyWise version running on your domain member, use the **show energywise version** privileged EXEC command. The EnergyWise version is referred to as the *EnergyWise specification* in the command output.

To display the software version running on your domain member, use the **show version** privileged EXEC command.



Note

If your domain member is running EnergyWise Phase 2 or later, enter the **no energywise domain** global configuration command to disable EnergyWise before downgrading your software to a release supporting EnergyWise Phase 1.

If your domain member is running EnergyWise Phase 1 and you upgrade your software to a release supporting EnergyWise Phase 2 or later:

- The EnergyWise settings in the running configuration are updated. The domain member sets the management password as the same domain password in the **energywise domain** command.
Enter the **copy running-config startup-config** privileged EXEC command to save the EnergyWise settings in the configuration file.
- For EnergyWise to work properly
 - All domain members must run EnergyWise Phase 1 or EnergyWise Phase 2 or later.
 - All domain members must have the same domain name and security mode.
 - If your switch is stacking-capable (for example a Catalyst 3750-X, 3750-E, or 3750 switch) and is a member of a switch stack, all the stack members must run the same EnergyWise version.

In EnergyWise Phase 1 these commands were modified:

- **energywise domain** *domain-name* **secret** [0 | 7] *password* global configuration command
We recommend that you reconfigure the EnergyWise domain with the **energywise domain** *domain-name* **security** { **ntp-shared-secret** | **shared-secret** } [0 | 7] *shared-secret* [**protocol udp** **port** *udp-port-number* [**interface** *interface-id* | **ip** *ip-address*]] global configuration command.
If you do not reconfigure the domain, the domain member synchronizes the management password with the the domain password.
- **energywise management** *tcp-port-number* global configuration command
We recommend that you reconfigure the management password for the domain with the **energywise management security shared-secret** [0 | 7] *shared-secret* **port** *tcp-port-number* global configuration command.

For Catalyst 4500-specific issues, see Appendix A, “Cisco EnergyWise and Catalyst 4500 Switches.”

For Catalyst 6500-specific issues, see Appendix B, “Cisco EnergyWise and Catalyst 6500 Switches.”

Manually Managing Power

- [Enabling EnergyWise, page 2-5](#)
- [Configuring Domain Member or Endpoint Attributes, page 2-6](#)
- [Powering the PoE Port, page 2-8](#)
- [Configuring Port Attributes, page 2-8](#)

Enabling EnergyWise

Beginning in privileged EXEC mode:

	Command	Purpose
Step 1	<code>configure terminal</code>	Enters global configuration mode.
Step 2	<code>service password-encryption</code>	(Optional) Enables password encryption. If you set a hidden password in Step 3, enter this command.
Step 3	<code>energywise domain <i>domain-name</i> security {ntp-shared-secret shared-secret} [0 7] <i>domain-password</i> [protocol udp port <i>udp-port-number</i> [interface <i>interface-id</i> ip <i>ip-address</i>]]</code>	<p>Enables EnergyWise on the network device, assigns it to a domain with the specified <i>domain-name</i>, sets the domain security mode, and sets the domain password to authenticate all communication in the domain.</p> <ul style="list-style-type: none"> • ntp-shared-secret—Sets a strong password with NTP. If the time between members varies ± 30 seconds, the domain member drops events. • shared-secret—Sets a strong password without NTP. • (Optional) 0—Uses a plain-text password. This is the default. • (Optional) 7—Uses a hidden password. <p>If you do not enter 0 or 7, the default is 0.</p> <ul style="list-style-type: none"> • (Optional) port <i>udp-port-number</i>—Specifies the UDP port that communicates with the domain. The range is from 1 to 65000. The default is 43440. • (Optional) interface <i>interface-id</i>—Specifies the port that communicates with the domain if the IP address is dynamically assigned. We recommend that you specify the <i>interface-id</i>. You should use this in a bridged network. • (Optional) ip <i>ip-address</i>—Specifies the IP address that communicates with the domain if the interface is a switched virtual interface (SVI) and VLAN trunking protocol (VTP) pruning is enabled. You should use this in a routed network. <p>For the <i>domain-name</i> and <i>domain-password</i></p> <ul style="list-style-type: none"> • You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. • Do not enter an asterisk (*) or a space between the characters or symbols.

	Command	Purpose
Step 4	end	Returns to privileged EXEC mode.
Step 5	show energywise show energywise domain	Verifies your entries.
Step 6	copy running-config startup-config	(Optional) Saves your entries in the configuration file.

Configuring Domain Member or Endpoint Attributes

Beginning in privileged EXEC mode:

	Command	Purpose
Step 1	configure terminal	Enters global configuration mode.
Step 2	energywise importance <i>importance</i>	Sets the importance. The range is from 1 to 100. The default is 1.
Step 3	energywise keywords <i>word,word,...</i>	Assigns at least one keyword. When assigning multiple keywords, separate the keywords with commas, and do not use spaces between keywords. <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. By default, keywords are not defined.
Step 4	service password-encryption	Enables password encryption. If you set a hidden password in Step 5 or Step 10, enter this command.
Step 5	energywise management security shared-secret [0 7] <i>mgmt-password</i> [port <i>tcp-port-number</i>]	Sets the management password on the domain member that the management station uses to communicate with the domain. <ul style="list-style-type: none"> (Optional) 0—Uses a plain-text password. (Optional) 7—Uses a hidden password. If you do not enter 0 or 7, the default is 0. For the <i>mgmt-password</i> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. (Optional) port <i>tcp-port-number</i>—Specifies the TCP port for management access. The range is from 1025 to 65535. The default is 43440. By default, the management password is not set.

	Command	Purpose
Step 6	energywise name <i>name</i>	<p>Specifies the EnergyWise-specific name.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. <p>The default is the hostname.</p>
Step 7	energywise neighbor { <i>hostname</i> <i>ip-address</i> } <i>udp-port-number</i>	<p>Assigns a static neighbor.</p> <ul style="list-style-type: none"> Domain Name System (DNS) hostname (<i>hostname</i>) or IP address (<i>ip-address</i>). UDP port (<i>udp-port-number</i>) that sends and receives queries. The range is from 1 to 65000. <p>By default, static neighbors are not assigned.</p>
Step 8	energywise role <i>role</i>	<p>Specifies the role in the EnergyWise domain. For example, lobby.b20.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. <p>The default is the model number.</p>
Step 9	energywise allow query { <i>save</i> <i>set</i> }	<p>Configures the domain member to respond to queries from the managements station or another domain member.</p> <ul style="list-style-type: none"> save—Respond to a query to save the running configuration. set—Respond to a query to change the power level or the EnergyWise attributes. <p>By default, the domain member responds to the set query.</p>
Step 10	energywise endpoint security { <i>none</i> <i>shared-secret</i> [<i>0</i> <i>7</i>] <i>shared-secret</i> }	<p>Sets the security mode for an endpoint.</p> <ul style="list-style-type: none"> none—Disables security. shared-secret—Uses a password for secure communication with the domain member. (Optional) 0—Uses a plain-text password. (Optional) 7—Uses a hidden password. <p>If you do not enter 0 or 7, the default is 0.</p> <ul style="list-style-type: none"> For the <i>shared-secret</i> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. <p>By default, the password is not set.</p>
Step 11	end	Returns to privileged EXEC mode.

	Command	Purpose
Step 12	<code>show energywise</code> <code>show energywise domain</code>	Verifies your entries.
Step 13	<code>copy running-config startup-config</code>	(Optional) Saves your entries in the configuration file.

Powering the PoE Port

Beginning in privileged EXEC mode:

	Command	Purpose
Step 1	<code>configure terminal</code>	Enters global configuration mode.
Step 2	<code>interface interface-id</code>	Specifies the port or the range of ports to be configured and enters interface configuration mode.
Step 3	<code>energywise level level</code>	Manually powers on the port. <ul style="list-style-type: none"> For a connected PoE endpoint, enter a power level of 10. For a non-PoE-capable endpoint, enter a power level from 1 to 10. The endpoint determines the appropriate action.
Step 4	<code>end</code>	Returns to privileged EXEC mode.
Step 5	<code>show energywise domain</code> <code>show energywise children</code>	Verifies your entries.
Step 6	<code>copy running-config startup-config</code>	(Optional) Saves your entries in the configuration file. Note The power level that you set in Step 3 is the default power level when the domain member restarts.

Configuring Port Attributes



Note See the [“Using Activity Check” section on page 2-12](#) for the switches that support the **energywise activitycheck** command.

Beginning in privileged EXEC mode:

	Command	Purpose
Step 1	<code>configure terminal</code>	Enters global configuration mode.
Step 2	<code>interface interface-id</code>	Specifies the port or the range of ports to be configured, and enters interface configuration mode.
Step 3	<code>energywise importance importance</code>	Sets the importance value of the port. The range is from 1 to 100. The default is 1.

	Command	Purpose
Step 4	energywise keywords <i>word,word,...</i>	<p>Assigns at least one keyword for the port.</p> <p>When assigning multiple keywords, separate the keywords with commas, and do not use spaces between keywords.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols <p>By default, keywords are not defined.</p>
Step 5	energywise name <i>name</i>	<p>Specifies the EnergyWise-specific port name.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. <p>The default is a short version of the port name; for example, Gi1.0.2 for Gigabit Ethernet 1/0/2.</p>
Step 6	energywise role <i>role</i>	<p>Specifies the role of the port in the domain, such as <i>lobbyport</i>.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. <p>By default, the role is <i>interface</i>.</p>
Step 7		<p>(Optional) Before entering the energywise activitycheck command</p> <ul style="list-style-type: none"> Verify that auto quality of service (auto-QoS) is enabled on the port and on the connected IP phone. If the domain member is connected to the IP phones through multiple Cisco devices, verify that they trust the CoS value in incoming packets. <p>To configure auto-QoS, see the “Using Activity Check” section on page 2-12 and the software documentation for your Cisco network device.</p>
Step 8	energywise activitycheck	<p>Verifies that the connected IP phone is not sending or receiving traffic before the domain member powers off the port.</p> <p>Note The domain member cannot determine if the IP phone is in the hold state.</p>
Step 9	energywise allow query set	<p>If the interface receives a query from the management station or another domain member, configures the interface to respond to a query changing the power level and the EnergyWise attributes.</p> <p>By default, the domain member responds to this query.</p>
Step 10	end	Returns to privileged EXEC mode.
Step 11	show running-config	Verifies your entries.
Step 12	copy running-config startup-config	(Optional) Saves your entries in the configuration file.

Configuring Recurrences

Beginning in privileged EXEC mode:

	Command	Purpose
Step 1	show energywise	Verifies that EnergyWise is enabled.
Step 2	configure terminal	Enters global configuration mode.
Step 3	time-range <i>time-range-name</i>	<p>Assigns a name to the time range, and enter time-range configuration mode. If you do not configure a time range, go to Step 6.</p> <p>The time range is based on the system clock.</p> <ul style="list-style-type: none"> • If EnergyWise is not running on the endpoint (for example, a PoE endpoint), the specified times are based on the domain member time zone. • If an agent or client is running on the endpoint, the specified times are based on the endpoint time zone. <p>Use the absolute and the periodic time-range configuration commands to specify times and days for a recurrence. You can use one absolute condition and multiple periodic conditions.</p> <p>If your absolute or periodic condition has an end time and day, the domain member ignores these values.</p>
Step 4	absolute start <i>hh:mm day_of_month month year</i>	<p>Sets the start time and day for the recurrence.</p> <ul style="list-style-type: none"> • <i>hh:mm</i>—Specifies the time (24-hour format) in hours and minutes. • <i>day month year</i>—Specifies the date. <ul style="list-style-type: none"> – <i>day_of_month</i>—The range is from 1 to 31. Use * for the wildcard. – <i>month</i>—The range is from January to December. Use * for the wildcard. – <i>year</i>—The minimum year is 1993.
Step 5	periodic <i>days_of_the_week hh:mm</i>	<p>Sets the weekly start time and day for the recurrence.</p> <ul style="list-style-type: none"> • <i>days_of_the_week</i>—Valid values are <ul style="list-style-type: none"> – Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, or Sunday—Enter a single day, a range of days with a dash between the starting and ending days, or multiple days separated by a comma. – daily—Enter if the recurrence starts from Monday to Sunday. – weekdays—Enter if the recurrence starts from Monday to Friday. – weekend—Enter if the event occurs on Saturday and Sunday. • <i>hh:mm</i>—Specifies the time (24-hour format) in hours and minutes.
Step 6	interface <i>interface-id</i>	Specifies the port or a range of ports to be configured, and enters interface configuration mode.

	Command	Purpose
Step 7	energywise level <i>level</i> recurrence importance <i>importance</i> { at <i>minute hour</i> <i>day_of_month month day_of_week</i> time-range <i>time-range-name</i> }	<p>Schedules a power-on or power-off event.</p> <ul style="list-style-type: none"> • level <i>level</i> —Specifies the power level. <ul style="list-style-type: none"> – To power off the endpoint, enter 0. – To power on the endpoint: <ul style="list-style-type: none"> If it is a PoE endpoint, enter 10. If it is another powered device, enter a power level from 1 to 10. The endpoint determines the appropriate action. • importance <i>importance</i>—The event occurs if the importance value of the endpoint is less than or equal to the importance value. The range is from 1 to 100. • at <i>minute hour day_of_month month day_of_week</i>—Specifies the time (24-hour format) in cron format for the recurrence. <ul style="list-style-type: none"> – <i>minute</i>—The range is from 0 to 59. Use * for the wildcard. – <i>hour</i>—The range is from 0 to 23. Use * for the wildcard. – <i>day_of_month</i>—The range is from 1 to 31. Use * for the wildcard. – <i>month</i>—The range is from 1 (January) to 12 (December). Use * for the wildcard. – <i>day_of_week</i>—The range is from 0 (Sunday) to 6 (Saturday). Use * for the wildcard. • time-range <i>time-range-name</i>—Specifies the time range for the recurrence. <p>The event uses the domain member time. Repeat this step to schedule another event.</p>
Step 8	end	Returns to privileged EXEC mode.
Step 9	show energywise recurrence	Verifies your entries.
Step 10	copy running-config startup-config	(Optional) Saves your entries in the configuration file.

Using Activity Check

- [Prerequisites, page 2-12](#)
- [Testing Activity Check, page 2-13](#)

Use this feature to ensure that the switch does not power off a phone that is in use.

For example, if you have a Cisco IP phone connected to a PoE port and activity check is enabled, the switch does not power off the phone if it is sending or receiving voice traffic. If the phone is not in use, it powers off within approximately 1 minute. If a PC is connected to the switch port of the phone, the PC loses network connectivity when the phone is powered off.

You can use the **energywise activitycheck** interface configuration command on these Cisco devices:

- Catalyst 6500 switches (see the *Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2* for the specific devices).
- Catalyst 4500 switches.



Note Before powering off a PoE port, Catalyst 6500 and Catalyst 4500 switches use interface statistics to determine that a Cisco IP phone connected to the PoE port is not sending or receiving traffic.

- Catalyst 3750-X, 3750-E, 3750, 3560-X, 3650-E, 3560, and 2960 switches.
- Cisco EtherSwitch service modules (NME-16ES-1G, NME-16ES-1G-P, NME-X-23ES-1G, NME-X-23ES-1G-P, NME-XD-24ES-1S-P, NME-XD-48ES-2S-P).
- Cisco enhanced EtherSwitch service modules (SM-D-ES2-48, SM-D-ES3-48-P, SM-D-ES3G-48-P, SM-ES2-16-P, SM-ES2-24, SM-ES2-24-P, SM-ES3-16-P, SM-ES3-24-P, SM-ES3G-16-P, SM-ES3G-24-P).

Prerequisites



Note These prerequisites do not apply to Catalyst 6500 switches.

Check these settings before using the **energywise activitycheck** command:

- All packets from the IP phone have the class of service (CoS) value 5.
To verify this, use the **show mls qos maps cos-output-q** privileged EXEC command to display the CoS output queue threshold map.

This example shows that CoS value 5 is mapped to queue 1 and threshold 3 on the Gigabit Ethernet 0/1 port:

```
Cos-outputq-threshold map:
  cos:  0   1   2   3   4   5   6   7
  -----
  queue-threshold: 4-3 4-2 3-3 2-3 3-3 1-3 2-3 2-3
```

This is the configuration for the PoE port:

```
<output truncated>
interface GigabitEthernet0/1
  srr-queue bandwidth share 10 10 60 20
  queue-set 2
  priority-queue out
  mls qos trust device cisco-phone
  mls qos trust cos
  auto qos voip cisco-phone
  service-policy input AutoQoS-Police-CiscoPhone
<output truncated>
```

- Auto quality of service (auto-QoS) for VoIP is enabled on the PoE port.
- Auto-QoS is enabled on the IP phone. The switch does not change the CoS value in the packet that comes from the IP phone.
- If the switch is connected to the IP phone through multiple Cisco devices, you have checked that they trust the CoS value in incoming packets and do not change it.

Testing Activity Check

After you have enabled activity check, test it to make sure that the switch powers off the port only when a connected Cisco IP phone is not sending or receiving voice traffic. While making a phone call:

- Set the port power level to 0. The switch does not power off the IP phone. To set the power level, you can:
 - Run a query (using the CLI or the management application programming interface (MAPI)): The switch performs an activity check before powering off.
 - Use a recurrence: The switch performs an activity check before powering off.
 - Use the CLI: The switch does not perform an activity check and powers off the PoE port immediately.

For information about setting the power level and using recurrences, see the [“Querying to Set Power Levels”](#) section on page 2-23 and the [“Configuring Recurrences”](#) section on page 2-10.

- Use the **show mls qos interface statistics** privileged EXEC command to display the port QoS statistics, including the number of packets in queue 1.

This command does not apply to Catalyst 6500 switches.

This example uses the **show mls qos maps cos-output-q** privileged EXEC command to show which output queue and threshold is mapped to CoS 5 for voice traffic. The example then uses the **show mls qos interface statistics** privileged EXEC command to display the number of packets in the output queue to determine if the domain member (the IP phone) is sending out packets:

```
DomainMember# show mls qos maps cos-output-q
                Cos-outputq-threshold map:
                cos: 0 1 2 3 4 5 6 7
                -----
queue-threshold: 2-1 2-1 3-1 3-1 4-1 1-1 4-1 4-1
<output truncated>
```

CoS 5 is mapped to queue-threshold: 1-1 (queue 1 and threshold 1).

```
DomainMember# show mls qos interface statistics

output queues enqueued:
queue:      threshold1  threshold2  threshold3
-----
queue 0:    0           0           0
queue 1:    0           0           0
queue 2:    0           0           0
queue 3:    0           0           0
<output truncated>
```

The output queue for queue 1 and threshold 1 is 0, which means that the phone is not sending out packets and the switch can power off the phone. If a phone conversation were in-progress, the output queue would have non-zero packets in the output queue.

Configuration Examples

- [Setting the Domain, page 2-15](#)
- [Manually Managing Power, page 2-15](#)
- [Automatically Managing Power, page 2-16](#)



Note

In the examples, the *interface-id* is in this format: *type slot-or-module-number/port-number*, such as gigabitethernet 0/5. To specify an interface, see your device software documentation.

Setting the Domain

```
DomainMember# show energywise
Interface  Role      Name      Usage      Lvl  Imp  Type
-----
fanfare    jsmith    1009.0(W) 5      100 paren

DomainMember# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
DomainMember(config)# energywise domain cisco security ntp-shared-secret cisco protocol
udp port 43440 ip 2.2.4.30
DomainMember(config)# energywise importance 50
DomainMember(config)# energywise keywords lab1,devlab
DomainMember(config)# energywise name LabSwitch
DomainMember(config)# energywise neighbor member1 43440
DomainMember(config)# energywise role role.labaccess
DomainMember(config)# energywise allow query save
DomainMember(config)# end
DomainMember# show energywise domain
Name      : member1
Domain    : cisco
Protocol  : udp
IP        : 2.2.2.21
Port      : 43440
DomainMember# show energywise neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Id  Neighbor Name      Ip:Port      Prot  Capability
--  -----
1   member-21         2.2.2.21:43440  udp   S I
2   member-31         2.2.4.31:43440  static S I
3   member-22         2.2.2.22:43440  cdp   S I
```

Manually Managing Power

To power on the lab IP phones:

```
DomainMember# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
DomainMember(config)# energywise domain cisco security shared-secret cisco protocol udp
port 43440 ip 2.2.4.44
DomainMember(config)# interface gigabitethernet0/3
DomainMember(config-if)# energywise importance 65
DomainMember(config-if)# energywise name labphone.5
DomainMember(config-if)# energywise role role.labphone
DomainMember(config-if)# end
```

To power off an IP phone connected to a PoE port:

```
DomainMember# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DomainMember(config)# energywise domain cisco security shared-secret cisco protocol udp
port 43440 ip 2.2.4.44
DomainMember(config)# interface gigabitethernet0/2
DomainMember(config-if)# energywise importance 65
DomainMember(config-if)# energywise name labphone.5
DomainMember(config-if)# energywise role role.labphone
DomainMember(config-if)# energywise level 0
DomainMember(config-if)# end
```

The domain member powers the IP phone whether EnergyWise is enabled or not.

Automatically Managing Power

The lab IP phones automatically power on at 08:00 and power off at 20:00.

```
DomainMember# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DomainMember(config)# energywise domain cisco security shared-secret cisco protocol udp
port 43440 ip 2.2.4.30
DomainMember(config)# interface gigabitethernet1/0/3
DomainMember(config-if)# energywise level 10 recurrence importance 90 at 0 8 * * *
DomainMember(config-if)# energywise level 0 recurrence importance 90 at 0 20 * * *
DomainMember(config-if)# energywise importance 50
DomainMember(config-if)# energywise name labInterface.3
DomainMember(config-if)# energywise role role.labphone
DomainMember(config-if)# end
```

```
DomainMember# show energywise recurrences
Id      Addr      Class Action Lvl Cron
--      ---      -
1       Gi0/3     QUERY SET    10 minutes: 0 hour: 8 day: * month: * weekday: *
2       Gi0/3     QUERY SET    0  minutes: 0 hour: 20 day: * month: * weekday: *
```

```
DomainMember# show running-config
<output truncated>
interface GigabitEthernet0/3
energywise level 10 recurrence at 0 8 * * *
energywise level 0 recurrence at 0 20 *
energywise importance 50
energywise role role.labphone
energywise name labInterface.3
end
<output truncated>
```

The PCs on the first floor automatically power on at 06:00 and power off at 20:00.

```

DomainMember# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DomainMember(config)# energywise domain cisco security shared-secret cisco protocol udp
port 43440 ip 2.2.4.30
DomainMember(config)# time-range onfirstfloor
DomainMember(config-time-range)# absolute start 0:00 1 August 2009
DomainMember(config-time-range)# periodic weekdays 6:11
DomainMember(config-time-range)# periodic weekend 9:37
DomainMember(config)# time-range offfirstfloor
DomainMember(config-time-range)# absolute start 0:00 1 August 2009
DomainMember(config-time-range)# periodic weekdays 20:19
DomainMember(config-time-range)# periodic weekend 18:59
DomainMember(config)# interface gigabitethernet0/3
DomainMember(config-if)# energywise level 10 recurrence importance 70 time-range
onfirstfloor
DomainMember(config-if)# energywise level 0 recurrence importance 70 time offfirstfloor
DomainMember(config-if)# energywise name floor.1
DomainMember(config-if)# energywise role pc-mgr
DomainMember(config-if)# end

DomainMember# show energywise recurrences
Id      Addr      Class Action Lvl Cron
--      ---      -
1       Gi0/3     QUERY SET    10 onfirstfloor
2       Gi0/3     QUERY SET    0  offfirstfloor

DomainMember# show running-config
<output truncated>
interface GigabitEthernet0/3
energywise level 10 recurrence importance 70 time-range onfirstfloor
energywise level 0 recurrence importance 70 time-range offfirstfloor
energywise role pc-mgr
energywise name floor.1
end
<output truncated>

```

The time range has end times and days such as:

```

DomainMember(config)# time-range offfirstfloor
DomainMember(config-time-range)# absolute start 0:00 1 August 2009 23:58 31 December
2011
DomainMember(config-time-range)# periodic monday 20:01 friday 23:55
DomainMember(config-time-range)# periodic saturday 18:05 sunday 23:30

```



Note

EnergyWise uses only the start time in the time range. EnergyWise ignores any configured end time.

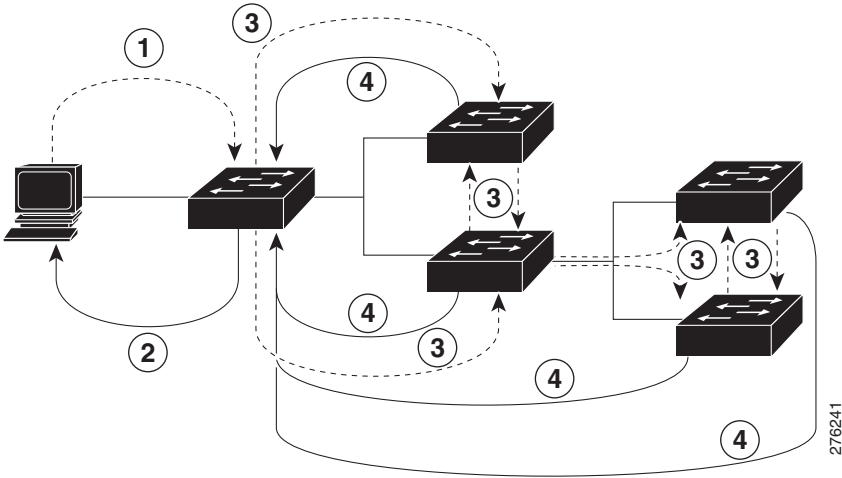
Queries

- [Using Queries to Manage Power in the Domain, page 2-19](#)
- [Query Examples, page 2-22](#)

The management station sending a query receives all the power-usage responses from the EnergyWise domain. The domain members use neighbor relationships to forward the query.

For secure communication, the domain members use a *shared secret* and send only authenticated queries to the endpoints.

Figure 2-1 Query Requests and Replies



1	Sends queries and messages to the domain	3	Sends queries and messages from domain members and endpoints
2	Replies to queries and messages from the domain	4	Replies to queries and messages from domain members and endpoints

EnergyWise-supported query types:

- Collect—Receive power-usage information in W from the domain members and endpoints.
- Save—Save the running configuration of a domain member. Use the **energywise allow query save** global configuration command.
- Set—Change the power level of a domain member or endpoint in the running configuration.
- Sum—Summarize the information from domain members and endpoints.

You can use these attributes to filter the results:

- **Importance**—Rate your devices based on the business or deployment context. The range is from 1 (least important) to 100 (most important). The default is 1. For example, a desk phone has a lower importance than a business-critical emergency phone.
- **Keywords**—Device descriptions (other than the name or role).
- **Name**—Device identity.
- **Role**—Device function based on the business or deployment context.
- **Usage**—Specifies the energy usage type of the EnergyWise device. The default is consumer.
 - **All**—Devices of all usage types.
 - **Consumer**—A device that consumes power, such as a switch.
 - **Meter**—A device that measures the pass-through power, such as a power distribution unit (PDU) that sends power from a source to a connected device.
 - **Producer**—A device that generates power, such as a solar panel.

The query results show domain members and endpoints with importance values less than or equal to the specified value in the query.

Using Queries to Manage Power in the Domain




Note If the *timeout* value in the **energywise query importance** privileged EXEC command is too short, the management station does not receive query results even if the domain members and endpoints respond to the query. For example, if you want to power off a specific phone but the *timeout* value in the **energywise query importance** command is too short, the phone is not powered off. When configuring the *timeout*, configure a minimum of 6 seconds to display correct output.

Beginning in privileged EXEC mode:

	Command	Purpose
Step 1	energywise query analyze domain <i>domain-name</i>	Runs a query to analyze and display information about the domain, including the domain size and the number of members and endpoints.

Command	Purpose
<p>Step 2 <code>energywise query importance importance {keywords word,word,... name name} collect {delta usage} [all [timeout timeout] consumer [timeout timeout] meter [timeout timeout] producer [timeout timeout] timeout timeout]</code></p> <p>or</p> <p><code>energywise query importance importance {keywords word,word,... name name} sum {delta usage} [all [timeout timeout] consumer [timeout timeout] meter [timeout timeout] producer [timeout timeout] timeout timeout]</code></p>	<p>Runs a query to display power information for the domain members and endpoints. Runs a query to change the power level and to power on or off the domain members, PoE ports, or endpoints.</p> <ul style="list-style-type: none"> • importance <i>importance</i>—Filters the results based on the importance value. Only domain members and endpoints with importance values less than or equal to the specified value respond to the query. The <i>importance</i> range is from 1 to 100. • keywords <i>word,word</i>—Filters the results based on one or more keywords. <p>Note Do not run a query with keywords *. No results are generated.</p> <ul style="list-style-type: none"> • name <i>name</i>—Filters the results based on the name. For the wildcard, use * or <i>name*</i> with the asterisk at the end of the name phrase. • collect {delta usage}—Displays power-usage information in watts (W) from the domain members and endpoints. <ul style="list-style-type: none"> – delta—Displays the <i>delta vector</i> with the <i>difference</i> between the actual power usage and the maximum power usage for each power level for what-if calculations. – usage—Displays the actual power usage. • sum {delta usage}—Displays the summary of the power-usage information from domain members and endpoints. <ul style="list-style-type: none"> – delta—Displays the delta vector. – usage—Displays the actual power usage. • (Optional) all—Displays EnergyWise devices of all usage types. • (Optional) consumer—Filters the results to display devices that consume power, such as a switch. This is the default usage type. • (Optional) meter—Filters the results to display devices that measure the pass-through power, such as a PDU that sends power from a source to a connected device. • (Optional) producer—Filters the results to display devices that generate power, such as a solar panel. • (Optional) timeout <i>timeout</i>—Sets the time in seconds that the management station waits for query results. When configuring the <i>timeout</i>, configure a minimum of 6 seconds to display correct output. <p>The default timeout is 6 seconds. The range is from 1 to 180.</p> <p>Repeat this step to run another query.</p>

Command	Purpose
Step 3 energywise query importance <i>importance</i> { keywords <i>word,word,...</i> name <i>name</i> } set level <i>level</i> [all [timeout <i>timeout</i>] consumer [timeout <i>timeout</i>] meter [timeout <i>timeout</i>] producer [timeout <i>timeout</i>] timeout <i>timeout</i>]	<p>(Optional) Runs a query to change the power level and to power on or off the domain members, PoE ports, or endpoints.</p> <hr/>  <p>Caution Use this query with care. It affects <i>both</i> the domain member on which you enter the command <i>and</i> other domain members and endpoints that match the query criteria.</p> <hr/> <ul style="list-style-type: none"> • importance <i>importance</i>—Filters the results based on the importance value. Only domain members and endpoints with values less than or equal to the specified value appear. The <i>importance</i> range is from 1 to 100. • keywords <i>word,word,...</i>—Filters the results based on one or more keywords. <p>Note Do not run a query with keywords *. No results are generated.</p> <ul style="list-style-type: none"> • name <i>name</i>—Filters the results based on the name. For the wildcard, use * or <i>name*</i> with the asterisk at the end of the name phrase. • set level <i>level</i>—Sets the power level of the domain members, endpoints, or PoE ports. The range is from 0 to 10. • (Optional) all—Displays EnergyWise devices of all usage types. • (Optional) consumer—Filters the results to display devices that consume power, such as a switch. This is the default usage type. • (Optional) meter—Filters the results to display devices that measure the pass-through power, such as a PDU that sends power from a source to a connected device. • (Optional) producer—Filters the results to display devices that generate power, such as a solar panel. • (Optional) timeout <i>timeout</i>—Sets the time in seconds that the management station waits for query results. When configuring the <i>timeout</i>, configure a minimum of 6 seconds to display correct output. <p>The default is 6 seconds. The range is from 1 to 180.</p> <p>Repeat this step to run another query.</p>

Query Examples

- [Querying to Analyze Domains, page 2-22](#)
- [Querying with the Name Attribute, page 2-22](#)
- [Querying with Keywords, page 2-23](#)
- [Querying to Set Power Levels, page 2-23](#)

Querying to Analyze Domains

This example shows how to display information about the domain, such as the number of members, endpoints and the domain size.

```

DomainMember# energywise query analyze domain
EnergyWise is currently analyzing the domain, please wait...
EnergyWise Domain Statistics
-----
Querying from HW Model: WS-C3560G-48PS
Number of Domain Members: 3
Number of Endpoints: 1
    
```

Querying with the Name Attribute

In this example, Switch 1 and Switch 2 are in the same domain. *shipping.1* is a PoE port on Switch 1, and *shipping.2* is a PoE port on Switch 2.

The example shows the power usage of the domain members and endpoints with names beginning with *shipping* and with importance values less than or equal to 80. Run this query on Switch 1:

```

DomainMember# energywise query importance 80 name shipping.* collect usage
EnergyWise query, timeout is 6 seconds:

Host          Name          Usage      Level  Imp
----          -
192.168.20.1  shipping.1    6.3 (W)   10     1
192.168.20.2  shipping.2    8.5 (W)   10     1

Queried: 2    Responded: 2    Time: 0.4 seconds
    
```

The first row (*shipping.1*) is from Switch 1. The second row (*shipping.2*) is from Switch 2, a neighbor of Switch 1.

Querying with Keywords

In this example, Switch 1 and Switch 2 are in the same domain. *shipping.1* is a PoE port on Switch 1, and *shipping.2* is a PoE port on Switch 2.

The example shows the power usage of IP phones with different names, different roles, and importance values less than or equal to 80, but all that have the *Admin* keyword. Run this query on Switch 1:

```
DomainMember# energywise query importance 80 keyword Admin collect usage
EnergyWise query, timeout is 6 seconds:
```

Host	Name	Usage	Level	Imp
192.168.40.2	shipping.1	6.3 (W)	10	1
192.168.50.2	orders.1	10.3 (W)	10	1
192.168.60.3	pc.1	200.0 (W)	8	75

```
Queried: 3    Responded: 3    Time: 0.5 seconds
```

Switch 1 reports two phones connected to Switch 2, a neighbor of Switch 1.



Note Do not run a query with **keywords ***. No results are generated.

Querying to Set Power Levels

Run these queries on Switch 1:

- Set the power level of *shipping.2* to 0:

```
DomainMember# energywise query importance 80 name shipping.2 set level 0
```

- Manually set the power level of *shipping.1* and *shipping.2* to 0:

```
DomainMember# energywise query importance 90 name shipping.* set level 0
```

- Set the power level of devices that have the keyword *Admin* to 10:

```
DomainMember# energywise query importance 60 keyword Admin set level 10
EnergyWise query, timeout is 6 seconds:
!!!!
Success rate is (2/2) setting entities
```

```
Queried: 2    Responded: 2    Time: 0.15 seconds
```

To show the power usage of EnergyWise devices with usage type **all**:

```
DomainMember# energywise query importance 100 name * collect usage all
EnergyWise query, timeout is 6 seconds:
```

Host	Name	Usage	Level	Imp
10.1.2.83	SEP5475d0db0dcb	3.8 (W)	10	5
10.1.2.71	SEP1C17D340834E	8.8 (W)	10	1
10.1.2.68	SEP3037A61748E2	8.8 (W)	10	1
10.1.2.211	Local_InfeedA_Outlet1	0.0 (W)	0	50
10.1.2.211	Local_InfeedA_Outlet2	0.0 (W)	0	50
10.1.2.211	Local_InfeedA_Outlet3	0.0 (W)	0	50
10.1.2.211	Local_InfeedA_Outlet4	0.0 (W)	0	50
10.1.2.211	Local_InfeedA_Outlet5	0.0 (W)	0	50
10.1.2.211	Local_InfeedA_Outlet6	34.0 (W)	0	50

To show the power usage of an IP phone with usage type **consumer**:

```
DomainMember# energywise query importance 100 name * collect usage consumer
EnergyWise query, timeout is 6 seconds:
Host          Name          Usage          Level  Imp
-----
10.1.2.83     SEP5475d0db0dcb  3.8 (W)  10    5
10.1.2.71     SEP1C17D340834E  8.8 (W)  10    1
10.1.2.68     SEP3037A61748E2  8.8 (W)  10    1
```

To show the power usage of a PDU outlet with usage type **meter**:

```
Switch#energywise query importance 100 name * collect usage meter
EnergyWise query, timeout is 6 seconds:
Host          Name          Usage          Level  Imp
-----
10.1.2.211    Local_InfeedA_Outlet1  0.0 (W)  0    50
10.1.2.211    Local_InfeedA_Outlet2  0.0 (W)  0    50
10.1.2.211    Local_InfeedA_Outlet3  0.0 (W)  0    50
10.1.2.211    Local_InfeedA_Outlet4  0.0 (W)  0    50
10.1.2.211    Local_InfeedA_Outlet5  0.0 (W)  0    50
10.1.2.211    Local_InfeedA_Outlet6  34.0 (W)  0    50
```

Wake on LAN

- [Understanding Wake on LAN, page 2-24](#)
- [WoL with Cisco EnergyWise, page 2-24](#)
- [Configuring WoL, page 2-25](#)

Understanding Wake on LAN

Wake-on-LAN (WoL) is an Ethernet computer networking standard, where you can use a network message to wake up a computer. WoL is implemented on the motherboard (BIOS) and the network interface. It is operating-system independent. WoL could be disabled by default on some PCs.

You send a WoL magic packet to the PC that you want to wake up. The packet contains the PC MAC address that helps uniquely identify the recipient PC.

Certain network interface cards (NICs) have a *SecureOn* feature that you can use to store a hexadecimal password within the NIC. When you send WoL packets to NICs with *SecureOn*, the NICs store this password as part of the packet, making the wake up secure.

WoL with Cisco EnergyWise

Use this feature to remotely power on a WoL-capable PC. The power level of the PC changes from nonoperational to operational.

The domain member sends a WoL magic packet to the PC. If the PC has an NIC that supports *SecureOn*, the domain member must send a magic packet with the same password to power on the PC.

Configuring WoL

When a WOL-enabled PC is connected to the domain member, you can configure the domain member to send a WoL magic packet to a specific device or to all devices in the EnergyWise network.

Beginning in privileged EXEC mode:

	Command	Purpose
Step 1	<pre>energywise query importance <i>importance</i> { keywords <i>word,word,...</i> name <i>name</i> } wol mac <i>mac-address</i> [password <i>password</i> port <i>tcp-port-number</i> [password <i>password</i>]]</pre>	<p>Sends a Wake on LAN (WoL) magic packet to a specific device or to all devices in the EnergyWise network.</p> <ul style="list-style-type: none"> • importance <i>importance</i>—Only domain members and endpoints with importance values less than or equal to the specified value respond to the query. The range is from 1 to 100. • keywords <i>word,word...</i>—Filters the results based on one or more keywords. <p>Note If you know that the PC that you want to power on is connected to an interface with the keyword <i>PC</i>, use the energywise query importance 100 keyword PC wol mac mac-address command. You can also use a name qualifier.</p> <ul style="list-style-type: none"> • name <i>name</i>—Filters the results based on the name. For the wildcard, use * or <i>name*</i> with the asterisk at the end of the name phrase. • wol mac <i>mac-address</i>—Filters the results based on the MAC address and powers on only the device with the matching MAC address. <p>Note If you do not know where the device is located, use the energywise query importance 100 name * wol mac mac-address command to send the WoL packet to all the domain members.</p> <ul style="list-style-type: none"> • (Optional) password <i>password</i>—Sets the password for the WoL-enabled endpoint. • (Optional) port <i>port-number</i>—Specifies a port number to communicate with the EnergyWise domain. The default is 7.

Best practices and guidelines for configuring WoL:

- WoL packets are sent as Layer 2 broadcast packets. To prevent broadcast storms, remove loops by using the Spanning Tree Protocol (STP).
- The **importance**, **name**, and **keyword** fields in the WoL query packet refer to attributes set on the interface that the PC connects to. For example, beginning in privileged EXEC mode:

```
DomainMember# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DomainMember(config)# interface gigabitethernet 0/1
DomainMember(config-if)# energywise name PC-1
DomainMember(config-if)# end
DomainMember(config)# end
DomainMember# energywise query importance 100 name PC-1 wol mac <mac-address>
```

- Check that an EnergyWise WoL query always has a **name** or **keyword** attribute associated with it. WoL packets are sent only from those interfaces, thus preventing broadcast storms.
- Before using WoL, check that you have enabled it in the BIOS and the NIC of the PC you want to wake up.

Disabling EnergyWise

Table 2-2 Disabling EnergyWise Interface Configuration Commands

Command	Mode	Purpose
no energywise	Interface configuration	Disables EnergyWise on the PoE port or on the endpoint.
no energywise activitycheck	Interface configuration	Configures the domain member not to wait until a Cisco IP phone connected to a PoE port is not sending or receiving voice traffic before the domain member powers off the port.
no energywise allow query set	Interface configuration	Configures the interface to drop all <i>set</i> queries for the interface and children. If configured you cannot change the power level or EnergyWise attributes of connected devices on the interface. To prevent power levels on all interfaces from being changed, apply the command to all interfaces.
no energywise [importance keywords [<i>word,word,...</i>] level name [<i>name</i>] role [<i>role</i>]]	Interface configuration	Removes the EnergyWise configuration on a domain member port. If you enter the no energywise level command, the domain member changes the power level to the default only when you restart the domain member or you enter the energywise level level command.
no energywise level level recurrence importance <i>importance</i> { <i>at minute hour</i> <i>day_of_month month day_of_week</i> timerange timerange-name }	Interface configuration	Removes the recurrence configuration on a domain member port.

Table 2-3 Disabling EnergyWise Global Configuration Commands

Command	Mode	Purpose
no energywise allow query save	Global configuration	Configures the domain member not to respond to a query that saves the running configuration.
no energywise allow query set	Global configuration	Configures the domain member to drop all <i>set</i> queries for the parent entity. If configured, you cannot change the power level or EnergyWise attributes of the domain member. This configuration does not apply to the interfaces or endpoints connected to any interfaces.
no energywise domain	Global configuration	Disables EnergyWise on the domain member.
no energywise endpoint	Global configuration	Configures the domain member not to establish parent-child relationships with connected EnergyWise-compatible endpoints. The endpoints cannot receive queries or messages from the domain member.

Table 2-3 Disabling EnergyWise Global Configuration Commands

Command	Mode	Purpose
no energywise { <i>importance</i> keywords [<i>word,word,...</i>] name neighbor [<i>hostname</i> <i>ip-address</i>] <i>udp-port-number</i> role }	Global configuration	Removes the EnergyWise configuration on the domain member.
no energywise management	Global configuration	Configures the domain member to not communicate with a connected management station that sends queries.



CHAPTER 3

EnergyWise CLI Commands

- [clear energywise](#), page 3-2
- [debug energywise](#), page 3-4
- [energywise \(global configuration\)](#), page 3-6
- [energywise \(interface configuration\)](#), page 3-10
- [energywise domain](#), page 3-14
- [energywise query](#), page 3-17
- [snmp-server enable traps energywise](#), page 3-22
- [show energywise](#), page 3-24



Note

In the examples, the *interface-id* is in this format: *type slot-or-module-number/port-number*; for example, `gigabitethernet 0/5`. To specify an interface, see your device software documentation.

clear energywise

Use the **clear energywise neighbors** and **clear energywise endpoints** privileged EXEC commands to delete the discovered domain member neighbors and IP endpoints from the EnergyWise database.

clear energywise { **endpoints** [**all** | **cached**] | **neighbors** }

Syntax Description

endpoints [all cached]	Clears the connected, EnergyWise-capable IP endpoints. PoE devices that do not run the agent are not deleted. <ul style="list-style-type: none"> (Optional) all—Removes all operational and nonoperational (cached) EnergyWise endpoints. (Optional) cached—Removes only nonoperational (cached) EnergyWise endpoints.
neighbors	Deletes the discovered domain member neighbors from the EnergyWise database. After the discovered domain members are deleted the local domain member immediately begins to rediscover any connected neighbors.

Command Default

There is no default.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SX14	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SG	This command was introduced on the Catalyst 4500 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
12.2(58)SE	The endpoint [all cached] keywords were added to the Catalyst 3750-X, 3750-E, 3750, 3560-X, 3560-E, 3560, and 2960 switches.
15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.

Usage Guidelines

To check that you have deleted neighbors and endpoints from the database, use the **show energywise neighbors** privileged EXEC command.



Note If you statically add a neighbour, the **clear energywise neighbors** privileged EXEC command does not affect it.

Examples

This example shows the EnergyWise children before and after using the **clear energywise endpoints** privileged EXEC command.

Before clearing endpoints:

```
DomainMember# show energywise children
Module/
Interface  Role           Name           Usage          Category  Lvl  Imp  Type
-----  ----
Switch    Switch         Switch         94.0 (W)       consumer  10   100  module
Gi0/12    Parent         Endpoint       12.0 (W)       consumer  10   50
endpoint
Gi0/14    IP Phone 7960  SEP000E833CB4E3  1.88 (W)       consumer  10   35   PoE
Gi0/15    IP Phone 7960  SEP0011920E0A05  1.775 (W)      consumer  10   35   PoE
```

Clearing endpoints:

```
DomainMember# clear energywise endpoints all
Cleared all energywise endpoints
```

After clearing endpoints:

```
DomainMember# show energywise children
Module/
Interface  Role           Name           Usage          Category  Lvl  Imp  Type
-----  ----
Switch    Switch         Switch         94.0 (W)       consumer  10   100  module
Gi0/14    IP Phone 7960  SEP000E833CB4E3  1.88 (W)       consumer  10   35   PoE
Gi0/15    IP Phone 7960  SEP0011920E0A05  1.775 (W)      consumer  10   35   PoE
```

Related Commands

Command	Description
show energywise neighbors	Displays the EnergyWise neighbors.

debug energywise

Use the **debug energywise** privileged EXEC command to debug EnergyWise endpoints and management stations.

debug energywise { **debug** | **endpoint** | **ha** | **management** | **packet** | **trace** }

Syntax Description

debug	Displays errors such as invalid sequence numbers and communication errors on the domain.
endpoint	Displays information about EnergyWise endpoints running a client or agent and helps detect mismatched domain names, secrets, and sequence numbers of connected endpoints.
ha	Displays POWERNET high availability information.
management	Displays information about authentication failures and EnergyWise management stations running power management applications.
packet	Displays packet trace information.
trace	Displays trace messages.

Command Default

EnergyWise debugging is disabled.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SX14	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
12.2(53)SE1	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
12.2(54)SG	This command was introduced on the Catalyst 4500 switches.
12.2(58)SE	The ha , packet , and trace keywords were added to the Catalyst 3750-X, 3750-E, 3750, 3560-X, 3560-E, 3560, and 2960 switches.
15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.



Usage Guidelines

Caution

Because debugging output is assigned high priority in the CPU process, it can render the system unusable. For this reason, use the **debug** commands only to troubleshoot specific problems or during troubleshooting sessions with Cisco technical support staff. It is best to use the **debug** commands during periods of lower network traffic and fewer users. Debugging during these periods decreases the likelihood that increased **debug** command processing overhead will affect system use.

The **undebg energywise** command is the same as the **no debug energywise** command.

When you enable debugging on a stacking-capable switch, it is enabled only on the stack master. To enable debugging on a stack member, use the **session** *switch-number* privileged EXEC command to start a session from the stack master. Enter the **debug** command on the stack-member command-line prompt. You can also use the **remote command** *stack-member-number* *LINE* privileged EXEC command on the stack master to enable debugging on a member switch before you start a session.

energywise (global configuration)

Use the **energywise** global configuration command to configure EnergyWise on a domain member or endpoint. Use the **no** form of this command to disable EnergyWise and to remove the EnergyWise configuration.

energywise allow query { **save** | **set** }

energywise endpoint security { **none** | **shared-secret** [**0** | **7**] *password* }

energywise { **importance** *importance* | **keywords** *word,word,...* | **level** *level* | **name** *name* | **neighbor** { *hostname* | *ip-address* } *udp-port-number* | **role** *role* }

energywise management security shared-secret [**0** | **7**] *mgmt-password* [**port** *tcp-port-number*]

no energywise { **allow query** { **save** | **set** } | **endpoint** | **importance** | **keywords** | **level** | **management** | **name** | **neighbor** | **role** }

Syntax Description

allow query { save set }	Configures the domain member to respond to queries from the managements station or another domain member. <ul style="list-style-type: none"> save—Respond to a query to save the running configuration. set—Respond to a query to change the power level or the EnergyWise attributes.
endpoint security { none shared-secret [0 7] <i>password</i> }	Sets the security mode for an endpoint. <ul style="list-style-type: none"> none—Disables security. shared-secret—Uses a password for secure communication with the connected domain member. (Optional) 0—Uses a plain-text password. (Optional) 7—Uses a hidden password. <p>If you do not enter 0 or 7, the default is 0.</p> <ul style="list-style-type: none"> For the <i>password</i> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
importance <i>importance</i>	Sets the importance. The range is from 1 to 100.
keywords <i>word,word,...</i>	Assigns at least one keyword. When assigning multiple keywords, separate the keywords with commas, and do not use spaces between keywords. <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.

level <i>level</i>	Sets the power level. The range is from 0 to 10.
name <i>name</i>	Specifies the EnergyWise-specific name. <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
neighbor { <i>hostname</i> <i>ip-address</i> } <i>udp-port-number</i>	Assigns a static neighbor. <ul style="list-style-type: none"> DNS (Domain Name System) <i>hostname</i> (<i>hostname</i>) or IP address (<i>ip-address</i>). UDP port (<i>udp-port-number</i>) that sends and receives queries. The range is from 1 to 65000.
role <i>role</i>	Specifies the role in the EnergyWise domain. For example, <i>lobby.b20</i> . <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
management security shared-secret [0 7] <i>mgmt-password</i> [port <i>tcp-port-number</i>]	Sets the management password for the management station communicating with the domain. <ul style="list-style-type: none"> (Optional) 0—Uses a plain-text password. (Optional) 7—Uses a hidden password. If you do not enter 0 or 7, the default is 0. For the <i>mgmt-password</i> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols. (Optional) port <i>tcp-port-number</i>—Specifies the TCP port for management access. The port number range is from 1025 to 65535.

Command Default

EnergyWise is disabled.

The domain member interfaces do not respond to **save** queries.

The interfaces respond to **set** queries.

The endpoint and management passwords are not set.

The importance is 1.

Keywords are not defined.

The power level is 10.

The *tcp-port-number* is 43440.

The name is the hostname.

Neighbors are not assigned.

The role is the model number.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SXI4	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SE	On the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches <ul style="list-style-type: none"> The management <i>udp-port-number</i> keywords were replaced with the management security shared-secret [0 7] shared-secret port tcp-port-number keywords. The allow query {save set} keywords were added.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
12.2(52)SG	This command was introduced on the Catalyst 4500 switches.
12.2(54)SG	On Catalyst the 4500 switches <ul style="list-style-type: none"> The management <i>udp-port-number</i> keywords were replaced with the management security shared-secret [0 7] shared-secret port tcp-port-number keywords. The allow query {save set} keywords were added.
15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.

Usage Guidelines

When you add a domain member to a domain, EnergyWise is enabled on the domain member.

When you add a PoE switch to a domain, EnergyWise is enabled on the switch and its PoE ports.

When setting a hidden (encrypted) password, enter the **service password-encryption** global configuration command before entering the **energywise management security shared-secret 7 mgmt-password [port tcp-port-number]** global configuration command.

If you enter the **no energywise level** command, the domain member does not immediately change the power level to the default. The power level changes when the domain member restarts or when you enter the **energywise level level** command.

Examples

This example shows how to enable EnergyWise, assign an IP phone to a domain, and set the domain and management passwords:

```
DomainMember# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DomainMember(config)# energywise domain cisco security shared-secret cisco protocol udp
port 43440 ip 2.2.4.30
DomainMember(config)# energywise importance 50
DomainMember(config)# energywise keywords lab1,devlab
DomainMember(config)# service password-encryption
DomainMember(config)# energywise management security shared-secret 7 cisco port 60500
DomainMember(config)# energywise name Device01
DomainMember(config)# energywise neighbor member-21 43440
DomainMember(config)# energywise role role.labaccess
DomainMember(config)# energywise allow query save
DomainMember(config)# end
```

Related Commands

Command	Description
show energywise	Displays the EnergyWise settings and status.
show energywise domain	Displays the domain to which the domain member or endpoint belongs.
show energywise recurrences	Displays the recurring-event settings and status.

energywise (interface configuration)

Use the **energywise** interface configuration command to configure EnergyWise on the domain member port. Use the **no** form of this command to disable EnergyWise and to remove the EnergyWise configuration.

```
energywise [activitycheck | allow query set | importance importance | keywords word,word,... |
level level [recurrence importance importance {at minute hour day_of_month month
day_of_week | time-range time-range-name}] | name name | role role]
```

```
no energywise [activitycheck | allow query set | importance | keywords [word,word,...] | level
[level recurrence [importance importance {at minute hour day_of_month month day_of_week
| time-range time-range-name}] | name [name] | role [role]]
```



Note

In the examples, the *interface-id* is in this format: *type slot-or-module-number/port-number*, for example, *gigabitethernet 0/5*. To specify an interface, see your device software documentation.

Syntax Description

activitycheck	<p>(Optional) Configures the domain member to wait until a Cisco IP phone connected to a PoE port is not sending or receiving traffic before the domain member powers off the port.</p> <p>Note The domain member cannot determine if the IP phone is in the hold state.</p> <p>The command is supported on:</p> <ul style="list-style-type: none"> Catalyst 6500 switches (see the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.) Catalyst 4500 switches. Catalyst 3750-X, 3750-E, 3750, 3560-X, 3650-E, 3560, and 2960 switches. Cisco EtherSwitch service modules (NME-16ES-1G, NME-16ES-1G-P, NME-X-23ES-1G, NME-X-23ES-1G-P, NME-XD-24ES-1S-P, NME-XD-48ES-2S-P). Cisco enhanced EtherSwitch service modules (SM-D-ES2-48, SM-D-ES3-48-P, SM-D-ES3G-48-P, SM-ES2-16-P, SM-ES2-24, SM-ES2-24-P, SM-ES3-16-P, SM-ES3-24-P, SM-ES3G-16-P, SM-ES3G-24-P).
allow query set	<p>(Optional) If the interface receives a query from the management station or another domain member, this command configures the interface to respond to a query changing the power level and the EnergyWise attributes.</p>
importance <i>importance</i>	<p>(Optional) Sets the importance of the port.</p> <p>The range is from 1 to 100.</p>

keywords <i>word,word</i>	<p>(Optional) Assigns at least one keyword for the port.</p> <p>When assigning multiple keywords, separate the keywords with commas, and do not use spaces between keywords.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
level <i>level</i>	<p>(Optional) Sets the power level of the port.</p> <p>The range is from 0 and 10.</p> <ul style="list-style-type: none"> To power off the endpoint, enter 0. To power on the endpoint: <ul style="list-style-type: none"> If it is a PoE endpoint, enter 10. If it is not a PoE endpoint, enter a power level from 1 to 10. The endpoint determines the appropriate action.
<p>recurrence importance <i>importance</i> { at <i>minute hour</i> <i>day_of_month month</i> <i>day_of_week</i> time-range <i>time-range-name</i> }</p>	<p>(Optional) Schedules the power-on or power-off event.</p> <ul style="list-style-type: none"> importance <i>importance</i>—The event occurs if the importance value of the endpoint is less than or equal to the specified importance value. The range is from 1 to 100. at <i>minute hour day_of_month month day_of_week</i>—Specifies the time (24-hour format) in cron format for the recurring event. <ul style="list-style-type: none"> <i>minute</i>—The range is from 0 to 59. Use * for the wildcard. <i>hour</i>—The range is from 0 to 23. Use * for the wildcard. <i>day_of_month</i>—The range is from 1 to 31. Use * for the wildcard. <i>month</i>—The range is from 1 (January) to 12 (December). Use * for the wildcard. <i>day_of_week</i>—The range is from 0 (Sunday) to 7 (Sunday). Use * for the wildcard. time-range <i>time-range-name</i>—Specifies the time range name for the recurring event. <p>The event uses the domain member time.</p>
name <i>name</i>	<p>(Optional) Specifies the EnergyWise-specific port name.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, %, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
role <i>role</i>	<p>(Optional) Specifies the role of the port in the domain, such as a <i>lobbyport</i>.</p> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, %, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.

Command Default

EnergyWise is disabled.

The domain member waits until a Cisco IP phone connected to a PoE port is not sending or receiving traffic before powering off the port.

The domain member responds to a query to change the power level and the EnergyWise attributes.

The importance is 1.

Keywords are not defined.

The power level is 10.

The recurring event is not configured.

The name is the short version of the port name, for example, Gi1.0.2 for Gigabit Ethernet 1/0/2.

The role is the model number.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SX14	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SE	The activitycheck , allow query set , and recurrence time-range <i>time-range-name</i> keywords were added on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SG	This command was introduced on Catalyst 4500 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
12.2(54)SG	The activitycheck , allow query set , and recurrence time-range <i>time-range-name</i> keywords were added on Catalyst 4500 switches.
15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.

Usage Guidelines

Before using the **energywise activitycheck** command, see the [“Using Activity Check” section on page 2-12](#).

If you enter the **no energywise level** command, the domain member does not immediately change the power level to the default. The power level changes when the domain member restarts or when you enter the **energywise level** *level* command.

For a recurring event, to configure multiple dates and times using the cron format (*minute hour day_of_month month day_of_week*)

- Use a comma (,) to specify a list of values without spaces between the values, for example, **1,3,4,7,8**.
- Use a dash (-) to specify a range of values, for example, **1-6** (same as **1,2,3,4,5,6**).
- Use an asterisk (*) for a wildcard.

- Use a slash (/) to skip a specific number of values. For example
 - Enter `*/15 * * * *` for the event occurs every 15 minutes.
 - Enter `0-59/3 * * * *` or `0,20,40` for the event to occur every 20 minutes.
 - Enter `*/61 * * * *` for the event to occur every hour.
 - Enter `* */3 * * * *` or `0,3,6,9,12,15,18,21` for the event to occur every three hours.

For information about specifying the *day_of_month* and the *day_of_week* in the **energywise level level recurrence importance importance at minute hour day_of_month month day_of_week** command, see the “Recurrences” section on page 2-2.

Examples

This example shows how to enable and configure EnergyWise on a port and how to configure a recurring event:

```
DomainMember# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DomainMember(config)# service password-encryption
DomainMember(config)# energywise domain cisco security shared-secret cisco protocol udp
port 43440 ip 2.2.4.30
DomainMember(config)# time-range onfirstfloor
DomainMember(config-time-range)# absolute start 0:00 1 August 2009
DomainMember(config-time-range)# periodic weekdays 6:00
DomainMember(config-time-range)# periodic weekend 9:00
DomainMember(config)# time-range offfirstfloor
DomainMember(config-time-range)# absolute start 0:00 1 August 2009
DomainMember(config-time-range)# periodic weekdays 20:00
DomainMember(config-time-range)# periodic weekend 18:00
DomainMember(config)# interface gigabitethernet0/3
DomainMember(config-if)# energywise level 10 recurrence importance 70 time-range
onfirstfloor
DomainMember(config-if)# energywise level 0 recurrence importance 70 time offfirstfloor
DomainMember(config-if)# energywise name floor.1
DomainMember(config-if)# energywise role pc-mgr
DomainMember(config-if)# end
```

Related Commands

Command	Description
absolute	Sets a specific time and day for a recurring event.
show energywise	Displays the EnergyWise settings and status.
show energywise domain	Displays the domain to which the domain member or endpoint belongs.
show energywise recurrences	Displays the recurring-event settings and status.
periodic	Sets a weekly time and day for a recurring event.
time-range	Assigns a name to the time range for a recurring event.

energywise domain

Use the **energywise domain** global configuration command to enable EnergyWise on a network device or endpoint, assign it to a domain, set the domain security mode, and set the domain password. Use the **no** form of this command to disable EnergyWise and to remove the EnergyWise configuration.

```
energywise domain domain-name security { ntp-shared-secret | shared-secret } [0 | 7]
  shared-secret [protocol udp port udp-port-number [interface interface-id | ip ip-address]]
```

```
no energywise domain
```

Syntax Description

domain <i>domain-name</i>	Assigns a network device or endpoint to a domain with the specified <i>domain-name</i> . <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
security { ntp-shared-secret shared-secret } [0 7] <i>shared-secret</i>	Sets the domain security mode and the domain password to authenticate all communication in the domain. <ul style="list-style-type: none"> ntp-shared-secret—Uses a strong password with Network Time Protocol (NTP). If the time between members varies ± 30 seconds the domain member or endpoint drops events. shared-secret—Sets a strong domain password without NTP. (Optional) 0—Uses a plain-text password. (Optional) 7—Uses a hidden password. <p>If you do not enter 0 or 7, the default is 0.</p> <ul style="list-style-type: none"> For the <i>shared-secret</i> <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
protocol udp port <i>udp-port-number</i>	(Optional) Specifies UDP as the communication protocol and specifies the UDP port that communicates with the domain. The range is from 1 to 65000.
interface <i>interface-id</i>	(Optional) Specifies the port that communicates with the domain if the IP address is dynamically assigned. We recommend that you specify the <i>interface-id</i> . You should use this in a bridged network.
ip <i>ip-address</i>	(Optional) Specifies the IP address that communicates with the domain if the interface is a switched virtual interface (SVI) and VLAN trunking protocol (VTP) pruning is enabled. You should use this in a routed network.

Command Default EnergyWise is disabled, and the network device or endpoint is not assigned to a domain.
The domain password is not set.
The *udp-port-number* is 43440.

Command Modes Global configuration

Command History	Release	Modification
	12.2(33)SX14	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
	12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
	12.2(52)SE	The secret [0 7] password keywords were replaced with the security {ntp-shared-secret shared-secret} [0 7] shared secret keywords on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
	12.2(52)SG	This command was introduced on the Catalyst 4500 switches.
	12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
	12.2(54)SG	The secret [0 7] password keywords were replaced with the security {ntp-shared-secret shared-secret} [0 7] shared-secret keywords on Catalyst 4500 switches.
	15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.

Usage Guidelines If you enter the **energywise domain domain-name security {ntp-shared-secret | shared-secret} [0 | 7] shared-secret** command, the domain member selects the first available port for communicating with the management station.

When setting a hidden (encrypted) password, enter the **service password-encryption** global configuration command before entering the **energywise management security shared-secret 7 mgmt-password [port tcp-port-number]** global configuration command.

When configuring a domain, ensure that you set the same security mode (either **ntp-shared-secret** or **shared-secret**) for all the domain members.

When using **ntp-share-secret** in a domain, ensure that the domain members are running NTP to synchronize their clocks. If NTP is not used or the clocks are not synchronized, some domain members may not be discovered.

Examples This example shows how to enable EnergyWise, set the *domain-name* and *shared-secret*, and specify the IP address:

```
DomainMember# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
DomainMember(config)# service password-encryption
DomainMember(config)# energywise domain cisco security shared-secret cisco protocol udp
port 43440 ip 2.2.4.30
```

Related Commands	Command	Description
	show energywise	Displays the EnergyWise settings and status.
	show energywise domain	Displays the domain to which the network device or endpoint belongs.

energywise query

Use the **energywise query** privileged EXEC command to display power information and to set the power level of domain members.

energywise query analyze domain *domain-name*

energywise query importance *importance* {**keywords** *word,word,...* | **name** *name*} **collect** {**delta** | **usage**} [**all** [**timeout** *timeout*] | **consumer** [**timeout** *timeout*] | **meter** [**timeout** *timeout*] | **producer** [**timeout** *timeout*] | **timeout** *timeout*]

energywise query importance *importance* {**keywords** *word,word,...* | **name** *name*} **set level** *level* [**all** [**timeout** *timeout*] | **consumer** [**timeout** *timeout*] | **meter** [**timeout** *timeout*] | **producer** [**timeout** *timeout*] | **timeout** *timeout*]

energywise query importance *importance* {**keywords** *word,word,...* | **name** *name*} **sum** {**delta** | **usage**} [**all** [**timeout** *timeout*] | **consumer** [**timeout** *timeout*] | **meter** [**timeout** *timeout*] | **producer** [**timeout** *timeout*] | **timeout** *timeout*]

energywise query importance *importance* {**keywords** *word,word,...* | **name** *name*} **wol mac** *mac-address* [**password** *password* | **port** *tcp-port-number* [**password** *password*]]

Syntax Description

analyze domain <i>domain-name</i>	Runs a query to analyze and display information about the domain, including the domain size and the number of members and endpoints.
importance <i>importance</i>	Only domain members or endpoints with importance values less than or equal to the specified value respond to the query. The <i>importance</i> range is from 1 to 100.
keywords <i>word,word,...</i>	Filters the results based on one or more keywords. When specifying multiple keywords, separate the keywords with commas, and do not use spaces between keywords. <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
name <i>name</i>	Filters the results based on the name. For wildcards, use * or <i>name*</i> with the asterisk at the end of the name phrase. <ul style="list-style-type: none"> You can enter alphanumeric characters and symbols such as #, (, \$, !, and &. Do not enter an asterisk (*) or a space between the characters or symbols.
collect { delta usage }	Displays power-usage information from the domain members and endpoints in watts (W). <ul style="list-style-type: none"> delta—Displays the <i>delta vector</i> with the <i>difference</i> between the actual power usage and the maximum power usage for each power level for what-if calculations. usage—Displays the actual power usage.
all	(Optional) Displays EnergyWise devices of all usage types.

consumer	(Optional) Filters the results to display devices that consume power, such as a switch. This is the default usage type.
meter	(Optional) Filters the results to display devices that measure the pass-through power, such as a PDU that sends power from a source to a connected device.
producer	(Optional) Filters the results to display devices that generate power, such as a solar panel.
timeout <i>timeout</i>	(Optional) Sets the time in seconds that the management station waits for query results. The range is from 1 to 180. When configuring the <i>timeout</i> , configure a minimum of 6 seconds to display correct output.
set level <i>level</i>	Sets the power level of the domain members or endpoints, including the PoE ports. The range is from 0 to 10.
sum { delta usage }	Displays the summary of the power-usage information from domain members and endpoint. <ul style="list-style-type: none"> • delta—Displays the delta vector. • usage—Displays the actual power usage.
wol mac <i>mac-address</i>	Filters the results based on the MAC address and powers on only the device with the matching MAC address.
password <i>password</i>	(Optional) Specifies the WoL password configured on the WoL-enabled endpoint. The password must be 6 characters long.
port <i>port-number</i>	(Optional) Specifies the port number on which the WoL-enabled endpoint listens for WoL packets.

Command Default

The *timeout* value is 6 seconds.

The *port-number* is 7.

The usage type is **consumer**.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SX14	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SE	The timeout <i>timeout</i> keywords were added on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SG	This command was introduced on the Catalyst 4500 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
12.2(54)SG	The timeout <i>timeout</i> keywords were added on the Catalyst 4500 switches.

Release	Modification
12.2(55)SE	The default timeout value was changed from 3 seconds to 6 seconds.
12.2(58)SE	The wol mac mac-address , port port-number , password password , analyze domain domain-name keywords were added on the Catalyst 3750-X, 3750-E, 3750, 3560-X, 3560-E, 3560, and 2960 switches.
15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.



Usage Guidelines

Caution Use this query with care. It affects the domain member on which you enter the command *and* other domain members and endpoints that match the query criteria.

If the *timeout* value in the **energywise query importance** privileged EXEC command is too short, the management station does not receive query results if when the domain members and endpoints respond to the query. For example, if you want to power off a specific phone but the *timeout* value in the **energywise query importance** command is too short, the phone is not powered off. When configuring the *timeout*, configure a minimum of 6 seconds to display correct output.

Do not run a query with **keywords ***. No results are generated.

When sending a WoL magic packet, if you do not know where the device is located, use the **energywise query importance 100 name * wol mac mac-address** command to send the packet to all domain members.

Examples

These examples show how to filter with the name.

```
DomainMember# energywise query importance 50 name phone* collect usage
EnergyWise query, timeout is 6 seconds:
```

Host	Name	Usage	Level	Imp
2.2.2.21	phone	0.0 (W)	10	1
2.2.2.21	phone	15.4 (W)	10	1
2.2.2.21	phoneA	0.0 (W)	10	1
2.2.2.22	phone	0.0 (W)	10	1
2.2.2.21	phoneB	0.0 (W)	10	1
2.2.2.22	phoneC	15.4 (W)	10	1
2.2.2.21	phone	0.0 (W)	10	1
2.2.2.23	phoneD	15.4 (W)	10	1
2.2.2.21	phone	0.0 (W)	10	1

Queried: 9 Responded: 9 Time: 0.26 seconds

```
DomainMember# energywise query importance 80 name * sum usage
EnergyWise query, timeout is 6 seconds:
```

```
Total Usage
-----
346.3 (W)
Queried: 147    Responded: 147    Time: 0.121 seconds
```

```
DomainMember# energywise query importance 90 name lobby* collect usage
EnergyWise query, timeout is 6 seconds:
```

Host	Name	Usage	Level	Imp
2.2.4.30	lobbyInterface.17	10.0 (W)	10	1
2.2.6.20	lobbypc.17	200.0 (W)	8	90

Queried: 2 Responded: 2 Time: 0.7 seconds

```

DomainMember# energywise query importance 900 name Fa1.0.4* sum usage
EnergyWise query, timeout is 6 seconds:
Total Usage
-----
129.0 (W)
Queried: 10    Responded: 10    Time: 0.6 seconds

```

This example shows the summary of the delta values and the potential power change in the domain.

```

DomainMember# energywise query importance 90 name * collect delta
EnergyWise query, timeout is 6 seconds:
Level  Label      Delta Power (W)
-----  -----
0      Shut        -12.9
1      Hibernate   +723.8
2      Sleep       +723.8
3      Standby     +723.8
4      Ready       +723.8
5      Low         +723.8
6      Frugal      +723.8
7      Medium      +723.8
8      Reduced     +723.8
9      High        +723.8
10     Full        +723.8

Queried: 48    Responded: 48    Time: 0.15 seconds

```

These examples show how to change the power level of all the domain members and endpoints.

```

DomainMember# energywise query importance 90 name * set level 0
EnergyWise query, timeout is 6 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!
Success rate is (48/48) setting entities

Queried: 48    Responded: 48    Time: 0.996 seconds

```

```

DomainMember# energywise query importance 90 name * set level 10
EnergyWise query, timeout is 6 seconds:
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!
Success rate is (48/48) setting entities
Queried: 48    Responded: 48    Time: 0.996 seconds

```

These examples show how to filter results with keywords.

```

DomainMember(config)# interface gigabitethernet0/2
DomainMember(config-if)# energywise keywords lobby,sattelite
DomainMember(config-if)# energywise keywords public
DomainMember(config-if)# end
DomainMember# show running-config interface gigabitethernet0/2
!
interface GigabitEthernet0/2
 energywise level 0 recurrence importance 90 at 0 8 * * *
 energywise level 10 recurrence importance 90 at 0 20 * * *
 energywise importance 50
 energywise role role.lobbyaccess
 energywise keywords lobby,sattelite,public
 energywise name lobbyInterface.2
end

```

DomainMember# **energywise query importance 90 keyword lobby collect usage**
 EnergyWise query, timeout is 6 seconds:

Host	Name	Usage	Level	Imp
----	----	-----	-----	---
2.2.4.30	lobbyInterface.17	15.4 (W)	10	1
2.2.5.30	pc.1	200.0 (W)	8	85
2.2.6.30	pc.2	200.0 (W)	8	85

Queried: 3 Responded: 3 Time: 1.1 seconds

DomainMember# **energywise query importance 90 keyword lobby sum usage**
 EnergyWise query, timeout is 6 seconds:

Total Usage

 415.4 (W)

Queried: 3 Responded: 3 Time: 0.11 seconds

This example shows how to send a directed WoL magic packet:

Queried: 148 Responded: 148 Time: 5.119 seconds
 DomainMember# **energywise query importance 100 keyword PC wol mac 0123.4567.89ab**
 EnergyWise query, timeout is 6 seconds:
 Success rate is (1/1) setting entities
 Queried: 1 Responded: 1 Time: 4.31 seconds

snmp-server enable traps energywise

Use the **snmp-server enable traps energywise** global configuration command to enable the domain member to send Simple Network Management Protocol (SNMP) notifications for EnergyWise traps or inform the network management system (NMS) of requests. Use the **no** form of this command to return to the default setting.

```
snmp-server enable traps energywise [event-occured] [level-change] [neighbor-added]
[neighbor-deleted]
```

```
no snmp-server enable traps energywise [event-occured] [level-change] [neighbor-added]
[neighbor-deleted]
```

Syntax Description

event-occured	(Optional) Enable EnergyWise event traps.
level-change	(Optional) Enable EnergyWise power-level change traps.
neighbor-added	(Optional) Enable EnergyWise traps when neighbors are added.
neighbor-deleted	(Optional) Enable EnergyWise traps when neighbors are removed.

Command Default

The sending of EnergyWise traps is disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.2(33)SX14	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SG	This command was introduced on the Catalyst 4500 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.

Usage Guidelines

Use the **snmp-server host** global configuration command to specify the host (network management system [NMS]) that receives the traps.

If you do not specify any keywords, all the EnergyWise traps are enabled.

You can verify your setting by entering the **show energywise** or the **show running-config** privileged EXEC command.

Examples

To send EnergyWise traps to the NMS:

```
DomainMember(config)# snmp-server enable traps energywise
```

To send only EnergyWise event traps to the NMS:

```
DomainMember(config)# snmp-server enable traps energywise event-occured
```

Related Commands

Command	Description
show energywise	Displays the EnergyWise settings and status.
show running-config	Displays the operating configuration.

show energywise

Use the **show energywise** privileged EXEC command to display the EnergyWise settings, the status of the domain member, and the status of the domain member port with a connected endpoint.

```
show energywise [categories | children [provisioned] | domain | events | level [children | current
[children] | delta [children] ] | neighbors | recurrences | statistics | usage [children] |
version]
```



Note

In the examples, the *interface-id* is in this format: *type slot-or-module-number/port-number*, such as gigabitethernet 0/5. To specify an interface, see your device software documentation.

Syntax Description

categories	(Optional) Displays the power levels.
children [provisioned]	(Optional) Displays the status of the connected endpoint. <ul style="list-style-type: none"> provisioned—Displays a summary of the EnergyWise information for the domain member and the connected endpoints.
domain	(Optional) Displays the name, domain name, protocol, IP address, and UDP port for the domain.
events	(Optional) Displays the last ten events (messages) sent to other members in the domain.
level [children current [children] delta [children]	(Optional) Displays the actual power levels. <ul style="list-style-type: none"> children—Actual power levels for the domain member and connected endpoints. current—Actual power levels for the domain member. <ul style="list-style-type: none"> (Optional) children—Actual power levels for the domain member and connected endpoints. delta—Delta vector for the domain member. <ul style="list-style-type: none"> (Optional) children—Delta vector for the domain member and connected endpoints.
neighbors	(Optional) Displays the neighbor table for the domain member.
recurrences	(Optional) Displays the EnergyWise settings and status for the recurring event.
statistics	(Optional) Displays the counters for events and errors.
usage [children]	(Optional) Displays the actual power for the domain member. <ul style="list-style-type: none"> children—Displays the actual power for the domain member and connected endpoints.
version	(Optional) Displays the EnergyWise version.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(33)SX14	This command was introduced on the Catalyst 6500 switches. See the <i>Cisco IOS Release Notes for Cisco EnergyWise, EnergyWise Phase 2</i> for the specific devices.
12.2(50)SE	This command was introduced on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SE	The children provisioned keywords were added on the Catalyst 3750-E, 3750, 3560-E, 3560, and 2960 switches.
12.2(52)SG	This command was introduced on the Catalyst 4500 switches.
12.2(53)SE2	This command was introduced on the Catalyst 3750-X and 3560-X switches.
12.2(54)SG	The children provisioned keywords were added on the Catalyst 4500 switches.
15.0(1)M2	This command was introduced on Cisco Integrated Service Routers Generation 2 (ISR G2), including Cisco 3900, 2900, and 1900 ISRs.

Examples

```

DomainMember# show energywise
Module/Interface  Role           Name           Usage          Category  Lvl  Imp  Type
-----
WS-C3560G-48PS   NRGYZ-TB-09   130.0 (W)     consumer      10       1    module

```

Table 3-1 show energywise Field Descriptions

Character	Description
Module/ Interface	Module or interface ID
Role	Domain member role
Name	Domain member name
Usage	Power usage in watts (W)
Category	Domain member usage type
Lvl	Domain member power level
Imp	Domain member importance value
Type	Domain member device type

```

DomainMember# show energywise children
Module/Interface  Role           Name           Usage          Category  Lvl  Imp  Type
-----
WS-C3750G-24PS   NRGYZ-FANOUT-00-1  103.0 (W)     consumer      10       1    module
WS-C3750G-48TS   NRGYZ-FANOUT-00-2  152.0 (W)     consumer      10       1    module
WS-C3750G-48TS   NRGYZ-FANOUT-00-3  152.0 (W)     consumer      10       1    module
WS-C3750G-48TS   NRGYZ-FANOUT-00-7  152.0 (W)     consumer      10       1    module
Total Displayed: 4      Usage: 559.0

```

■ **show energywise**

```

DomainMember# show energywise children provisioned
Module/Interface  Role      Name      Usage      Category  Lvl  Imp  Type
-----
WS-C3560G-48PS   NRGYZ-TB-09  130.0 (W) consumer  10  1  module
Gi0/1            interface   Gi0.1     0.0 (W) consumer  10  1  PoE
Gi0/2            interface   Gi0.2     0.0 (W) consumer  10  1  PoE
Gi0/3            interface   Gi0.3     0.0 (W) consumer  10  1  PoE
Gi0/4            interface   Gi0.4     0.0 (W) consumer  10  1  PoE
Gi0/5            interface   Gi0.5     0.0 (W) consumer  10  1  PoE
Gi0/6            interface   Gi0.6     0.0 (W) consumer  10  1  PoE
Gi0/7            interface   Gi0.7     0.0 (W) consumer  10  1  PoE
Gi0/8            interface   Gi0.8     0.0 (W) consumer  10  1  PoE
Gi0/9            interface   Gi0.9     0.0 (W) consumer  10  1  PoE
<output truncated>
Total Displayed: 48      Usage: 145.3

```

```

DomainMember# show energywise domain
Name      : Manager-1
Domain    : cisco
Protocol  : udp
IP        : 2.2.2.21
Port      : 43440

```

Table 3-2 *show energywise domain Field Descriptions*

Character	Description
Name	Domain member name
Domain	Domain name
Protocol	Communication protocol
IP	IP address
Port	Port that communicates with the domain

```

DomainMember# show energywise events
-----
Sequence: 343550446  Priority: 100  References: 0:1  Errors:
Class:      PN_CLASS_DISCOVERY
Action:     PN_ACTION_CPQR_POWERNET_DISCOVERY_DISCOVERY_UPDATE
Reply To:   2.2.2.10:43440
-----
Sequence: 345394888  Priority: 100  References: 0:1  Errors:
Class:      PN_CLASS_DISCOVERY
Action:     PN_ACTION_CPQR_POWERNET_DISCOVERY_DISCOVERY_UPDATE
Reply To:   2.2.2.10:43440
-----
Sequence: 343550449  Priority: 100  References: 0:1  Errors:
Class:      PN_CLASS_DISCOVERY
Action:     PN_ACTION_CPQR_POWERNET_DISCOVERY_DISCOVERY_UPDATE
Reply To:   2.2.2.10:43440
-----
Sequence: 345394889  Priority: 100  References: 0:1  Errors:
Class:      PN_CLASS_DISCOVERY
Action:     PN_ACTION_CPQR_POWERNET_DISCOVERY_DISCOVERY_UPDATE
Reply To:   2.2.2.10:43440
-----
Sequence: 343550450  Priority: 100  References: 0:1  Errors:
Class:      PN_CLASS_DISCOVERY
Action:     PN_ACTION_CPQR_POWERNET_DISCOVERY_DISCOVERY_UPDATE
<output truncated>

```

Table 3-3 show energywise events Field Descriptions

Character	Description
Sequence	Energywise event sequence number
Class	Energywise event class
Action	Energywise event action
Reply to	IP address where the event originated

DomainMember# **show energywise level**

Interface	Name	Levels (Watts)										
		0	1	2	3	4	5	6	7	8	9	10
	NRGYZ-TB-09	0.0	390.0	390.0	390.0	390.0	390.0	390.0	390.0	390.0	390.0	390.0
Gi0/27	SEP001201D75BB9	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/41	ap	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4

DomainMember# **show energywise level children**

Interface	Name	Levels (Watts)										
		0	1	2	3	4	5	6	7	8	9	10
	NRGYZ-TB-09	0.0	390.0	390.0	390.0	390.0	390.0	390.0	390.0	390.0	390.0	90.0
Gi0/1	Gi0.1	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/2	Gi0.2	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/3	Gi0.3	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/4	Gi0.4	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/5	Gi0.5	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/6	Gi0.6	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/7	Gi0.7	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
Gi0/8	Gi0.8	0.0	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4

<output truncated>

DomainMember# **show energywise level current**

Interface	Name	Level	Value
	NRGYZ-TB-09	10	390.0 (W)
Gi0/27	SEP001201D75BB9	10	15.4 (W)
Gi0/41	ap	10	15.4 (W)

DomainMember# **show energywise level current children**

Interface	Name	Level	Value
	NRGYZ-TB-09	10	390.0 (W)
Gi0/1	Gi0.1	10	15.4 (W)
Gi0/2	Gi0.2	10	15.4 (W)
Gi0/3	Gi0.3	10	15.4 (W)
Gi0/4	Gi0.4	10	15.4 (W)
Gi0/5	Gi0.5	10	15.4 (W)
Gi0/6	Gi0.6	10	15.4 (W)
Gi0/7	Gi0.7	10	15.4 (W)
Gi0/8	Gi0.8	10	15.4 (W)
Gi0/9	Gi0.9	10	15.4 (W)
Gi0/10	Gi0.10	10	15.4 (W)

<output truncated>

```
show energywise
```

```
DomainMember# show energywise level delta
```

```

                                          Levels (Watts)
Interface  Name
-----
NRGYZ-TB-09          -130.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0
Gi0/27      SEP001201D75BB9      -6.3  9.1  9.1  9.1  9.1  9.1  9.1  9.1  9.1  9.1  9.1  9.1
Gi0/41      ap                -9.0  6.4  6.4  6.4  6.4  6.4  6.4  6.4  6.4  6.4  6.4  6.4

```

```
DomainMember# show energywise level delta children
```

```

                                          Levels (Watts)
Interface  Name
-----
NRGYZ-TB-09          -130.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0 260.0
Gi0/1      Gi0.1           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
Gi0/2      Gi0.2           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
Gi0/3      Gi0.3           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
Gi0/4      Gi0.4           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
Gi0/5      Gi0.5           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
Gi0/6      Gi0.6           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
Gi0/7      Gi0.7           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
Gi0/8      Gi0.8           0.0   15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4  15.4
<output truncated>

```

```
DomainMember# show energywise neighbors
```

```

Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
                  S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone, U - Unknown
Id  Neighbor Name      Ip:Port      Prot  Capability
--  -
1   Router A           10.0.0.11:43440  udp   R
2   Switch A           10.0.0.12:43440  cdp   S I
3   Router B           10.0.0.36:43440  cdp   U
4   IP_phone A        10.0.0.14:43440  udp   U
5   Switch B           10.0.0.4:43440   udp   R
6   Switch C           10.0.0.5:43440   udp   R
7   Router C           10.0.0.7:43440   udp   R

```

Table 3-4 show energywise neighbors Field Descriptions

Character	Description
Id	Neighbor ID
Neighbor Name	Neighboring domain member name
Ip: Port	Neighbor IP address and port
Prot	Protocol that the neighbor was discovered on
Capability	See device capability codes

When you use the **energywise level level recurrence importance importance at minute hour day_of_month month day_of_week** interface configuration command:

```
DomainMember# show energywise recurrences
```

```

Id      Interface  Class Action Lvl Cron/Time-range
--      -
1       Gi0/1      QUERY SET    10 minutes: 34 hour: 6 day: * month: * weekday:*

```

When you use the **energywise level level recurrence importance importance time-range time-range-name** interface configuration command:

```
DomainMember# show energywise recurrences
Id      Addr      Class Action Lvl Cron/Time-range
--      -
1       Gi0/1     QUERY SET 10 tt-range
2       Gi0/2     QUERY SET 10 periodicdaily
4       Gi0/3     QUERY SET 10 absolutestart06:34**2009
```

Table 3-5 show energywise recurrences Field Descriptions

Character	Description
Id	Recurrence ID
Addr	Recurrence configuration interface
Class	Recurring event class
Action	Recurring event action
Lvl	EnergyWise level set by recurring event
Cron/ Time-range	Recurring event in cron format/ Recurring event time-range name

```
DomainMember# show energywise statistics
Children: 2 Errors: 0 Drops: 3 Events: 3256
```

```
DomainMember# show energywise usage
Interface Name Usage Category Caliber
-----
NRGYZ-TB-09 130.0 (W) consumer max
Gi0/27 SEP001201D75BB9 6.3 (W) consumer trusted
Gi0/41 ap 9.0 (W) consumer trusted
```

```
Total Displayed: 3 Usage: 145.3
```

Table 3-6 show energywise usage Field Descriptions

Character	Description
Interface	Interface ID
Name	Domain member name
Usage	Power usage in watts (W)
Category	Domain member usage type
Caliber	Power usage caliber

■ show energywise

```
DomainMember# show energywise usage child
Interface  Name          Usage          Category  Caliber
-----
          NRGYZ-TB-09      130.0 (W)      consumer  max
Gi0/1      Gi0.1         0.0 (W)        consumer  presumed
Gi0/2      Gi0.2         0.0 (W)        consumer  presumed
Gi0/3      Gi0.3         0.0 (W)        consumer  presumed
Gi0/4      Gi0.4         0.0 (W)        consumer  presumed
Gi0/5      Gi0.5         0.0 (W)        consumer  presumed
Gi0/6      Gi0.6         0.0 (W)        consumer  presumed
Gi0/7      Gi0.7         0.0 (W)        consumer  presumed
Gi0/8      Gi0.8         0.0 (W)        consumer  presumed
Gi0/9      Gi0.9         0.0 (W)        consumer  presumed
```

<output truncated>

Total Displayed: 48 Usage: 145.3

```
DomainMember# show energywise version
EnergyWise is Enabled
IOS Version: 12.2(n)xx
EnergyWise Specification: (rel2_7)n.0.n
```

Related Commands

Command	Description
energywise (global configuration)	Enables and configures EnergyWise on the domain member.
energywise (interface configuration)	Configures EnergyWise on the PoE port.



CHAPTER 4

Troubleshooting EnergyWise

- [Using CLI Commands, page 4-1](#)
- [Verifying the Power Usage, page 4-2](#)
- [Detecting Communication Failures, page 4-2](#)

Using CLI Commands

Table 4-1 show Privileged EXEC Commands

Command	Purpose
<code>show energywise</code>	Displays the settings and status for the domain member or endpoint.
<code>show energywise children</code>	Displays the status of the connected endpoints.
<code>show energywise children provisioned</code>	Displays a summary of the EnergyWise information for the domain member and the connected endpoints.
<code>show energywise domain</code>	Displays the domain to which the domain member or endpoint belongs.
<code>show energywise events</code>	Display the last ten events (messages) sent to other domain members or endpoints in the domain.
<code>show energywise neighbors</code>	Displays the neighbor tables for the domain member.
<code>show energywise recurrences</code>	Displays the EnergyWise settings and status for recurrence.
<code>show energywise statistics</code>	Displays the counters for events and errors.
<code>show energywise usage</code>	Displays the actual power usage on the domain member or endpoint.
<code>show energywise version</code>	Displays the EnergyWise version.
<code>show version</code>	Displays the software version.
<code>show power inline</code>	Displays the PoE status.
<code>show cdp neighbors</code>	Displays the neighbors discovered by CDP.

For more information about the commands, see Chapter 3, “EnergyWise CLI Commands” and the platform-specific command references on Cisco.com.

Verifying the Power Usage

This example shows that the Cisco 7960 IP Phone uses 6.3 W and that the Cisco 7970G IP Phone uses 10.3 W.

```
Switch# show energywise usage children
Interface  Name           Usage           Caliber
-----  -
          Switch      144.0 (W)      max
Gi0/1     Gi0.1          6.3 (W)         trusted
Gi0/2     Gi0.2          10.3 (W)        trusted
```

Detecting Communication Failures

Use the EnergyWise debug mode.

Command	Purpose
debug energywise debug	Displays errors such as invalid sequence numbers and communication errors on the domain.
debug energywise endpoint	Displays information about EnergyWise endpoints running a client or agent, helps detect mismatched domain names, secrets, and sequence numbers of connected endpoints.
debug energywise ha	Displays POWERNET high availability information.
debug energywise management	Displays information about authentication failures and EnergyWise management stations running power management applications.
debug energywise packet	Displays packet trace information.
debug energywise trace	Displays trace messages.



APPENDIX **A**

Cisco EnergyWise and Catalyst 4500 Switches

For Catalyst 4500 switches running EnergyWise Phase 2 and later:

- For high availability
 - To perform an ISSU downgrade from a Cisco IOS release supporting EnergyWise Phase 2 to an earlier software release that does not support EnergyWise, disable EnergyWise on the switch first.
 - To perform an ISSU downgrade from a software release supporting EnergyWise Phase 2 to a release supporting EnergyWise Phase 1, disable EnergyWise on the switch first because of CLI compatibility issues between EnergyWise Phase 1 and EnergyWise Phase 2.
 - To perform an ISSU downgrade from a Cisco IOS release supporting EnergyWise Phase 2 to an earlier release that does not support EnergyWise, you must remove the **snmp-server enable traps energywise** global configuration command from the switch configuration.
 - During an ISSU upgrade from a software release supporting EnergyWise Phase 1 to a release supporting EnergyWise Phase 2, the EnergyWise settings in the running configuration are updated. The switch sets the management password to the same domain password as in the **energywise domain** command. You must enter the **copy running-config startup-config** privileged EXEC command to save the EnergyWise settings in the configuration file.
- For stateful switchover (SSO) mode
 - On a redundant chassis operating in SSO mode, the **energywise neighbor hostname udp-port-number** global configuration command does not work. Use the **energywise neighbor ip-address udp-port-number** global configuration command to specify the IP address of the host.



Note

If your switch is running EnergyWise Phase 2, enter the **no energywise domain** global configuration command to disable EnergyWise before downgrading your software to a release supporting EnergyWise Phase 1.

For more information, see the [“CLI Compatibility” section on page 2-4](#).



APPENDIX **B**

Cisco EnergyWise and Catalyst 6500 Switches

For Catalyst 6500 switches running EnergyWise Phase 2 and later:

- For high availability
 - To perform an ISSU downgrade from a Cisco IOS release supporting EnergyWise Phase 2 and later to an earlier software release that does not support EnergyWise, first disable EnergyWise on the switch.
 - To perform an ISSU downgrade from a Cisco IOS release supporting EnergyWise Phase 2 and later to an earlier release that does not support EnergyWise, remove the **snmp-server enable traps energywise** global configuration command from the switch configuration.
- For stateful switchover (SSO) mode
 - On a redundant chassis operating in SSO mode, the **energywise neighbor hostname udp-port-number** global configuration command does not work. Use the **energywise neighbor ip-address udp-port-number** global configuration command to specify the IP address of the host.

For more information, see the [“CLI Compatibility” section on page 2-4](#).



Important Notice

- [Disclaimer, page C-1](#)
- [Statement 361—VoIP and Emergency Calling Services do not Function if Power Fails, page C-1](#)
- [Statement 1071—Warning Definition, page C-3](#)

Disclaimer

Cisco EnergyWise enables you to reduce energy consumption in your network by turning off the power to devices when they are not in use. If IP phones are part of your network, they can also be turned off through EnergyWise, in which case calls cannot be made or received, and the phones cannot be turned on except by the network administrator or according to rules established in EnergyWise by the network administrator. Laws in the location of your network might require phones to remain available for emergencies. It is your responsibility to identify the laws which apply and to comply with them. Even in the absence of a law, we strongly recommend that you designate certain phones which will always be on and available to make and receive emergency calls. These phones should be clearly identified, and all employees or others who might require emergency access to make or receive calls should be informed of the availability of these phones.

Statement 361—VoIP and Emergency Calling Services do not Function if Power Fails



Warning

Voice over IP (VoIP) service and the emergency calling service do not function if power fails or is disrupted. After power is restored, you might have to reset or reconfigure equipment to regain access to VoIP and the emergency calling service. In the USA, this emergency number is 911. You need to be aware of the emergency number in your country.

Waarschuwing

Voice over IP (VoIP)-service en de service voor noodoproepen werken niet indien er een stroomstoring is. Nadat de stroomtoevoer is hersteld, dient u wellicht de configuratie van uw apparatuur opnieuw in te stellen om opnieuw toegang te krijgen tot VoIP en de noodoproepen. In de VS is het nummer voor noodoproepen 911. U dient u zelf op de hoogte te stellen van het nummer voor noodoproepen in uw land.

Varoitus	Voice over IP (VoIP) -palvelu ja hätäpuhelupalvelu eivät toimi, jos virta katkeaa tai sen syötössä esiintyy häiriötä. Kun virransyöttö on taas normaali, sinun täytyy mahdollisesti asettaa tai määrittää laitteisto uudelleen, jotta voisit jälleen käyttää VoIP-palvelua ja hätäpuhelupalvelua. Yhdysvalloissa hätänumero on 911. Selvitä, mikä on omassa kotimaassasi käytössä oleva hätänumero.
Attention	Le service Voice over IP (VoIP) et le service d'appels d'urgence ne fonctionnent pas en cas de panne de courant. Une fois que le courant est rétabli, vous devrez peut-être réinitialiser ou reconfigurer le système pour accéder de nouveau au service VoIP et à celui des appels d'urgence. Aux États-Unis, le numéro des services d'urgence est le 911. Vous devez connaître le numéro d'appel d'urgence en vigueur dans votre pays.
Warnung	Bei einem Stromausfall oder eingeschränkter Stromversorgung funktionieren VoIP-Dienst und Notruf nicht. Sobald die Stromversorgung wieder hergestellt ist, müssen Sie möglicherweise die Geräte zurücksetzen oder neu konfigurieren, um den Zugang zu VoIP und Notruf wieder herzustellen. Die Notrufnummer in den USA lautet 911. Wählen Sie im Notfall die für Ihr Land vorgesehene Notrufnummer.
Avvertenza	Il servizio Voice over IP (VoIP) e il servizio per le chiamate di emergenza non funzionano in caso di interruzione dell'alimentazione. Ristabilita l'alimentazione, potrebbe essere necessario reimpostare o riconfigurare l'attrezzatura per ottenere nuovamente l'accesso al servizio VoIP e al servizio per le chiamate di emergenza. Negli Stati Uniti, il numero di emergenza è 911. Si consiglia di individuare il numero di emergenza del proprio Paese.
Advarsel	Tjenesten Voice over IP (VoIP) og nødanropstjenesten fungerer ikke ved strømbrydd. Etter at strømmen har kommet tilbake, må du kanskje nullstille eller konfigurere utstyret på nytt for å få tilgang til VoIP og nødanropstjenesten. I USA er dette nødnummeret 911. Du må vite hva nødnummeret er i ditt land.
Aviso	O serviço Voice over IP (VoIP) e o serviço de chamadas de emergência não funcionam se houver um corte de energia. Depois do fornecimento de energia ser restabelecido, poderá ser necessário reiniciar ou reconfigurar o equipamento para voltar a utilizar os serviços VoIP ou chamadas de emergência. Nos EUA, o número de emergência é o 911. É importante que saiba qual o número de emergência no seu país.
¡Advertencia!	El servicio de voz sobre IP (VoIP) y el de llamadas de emergencia no funcionan si se interrumpe el suministro de energía. Tras recuperar el suministro es posible que deba que restablecer o volver a configurar el equipo para tener acceso a los servicios de VoIP y de llamadas de emergencia. En Estados Unidos el número de emergencia es el 911. Asegúrese de obtener el número de emergencia en su país.
Varning!	Tjänsten Voice over IP (VoIP) och larmnummertjänsten fungerar inte vid strömbrott. Efter att strömmen kommit tillbaka måste du kanske återställa eller konfigurera om utrustningen för att få tillgång till VoIP och larmnummertjänsten. I USA är det här larmnumret 911. Du bör ta reda på det larmnummer som gäller i ditt land.
Figyelem	Az IP csatornán történő hangátvitel (VoIP) és a segélyhívó szolgáltatás nem működik, ha az áramellátás megszűnik vagy megszakad. Az áramellátás helyreállítását követően előfordulhat, hogy alaphelyzetbe kell állítani vagy újra kell konfigurálni a berendezést, hogy újra hozzáférhessen a VoIP és a segélyhívó szolgáltatáshoz. Az Egyesült Államokban a segélyhívó szám 911. Tisztában kell lennie a saját országának segélyhívó számával.

Предупреждение	Служба передачи голоса по IP (VoIP) и служба экстренных вызовов не будут работать, если произошел сбой питания. После восстановления питания, возможно, потребуется перенастроить оборудование, чтобы возобновить доступ к службе VoIP и службе экстренных вызовов. В США телефон службы экстренных вызовов 911. Вам необходимо знать телефон этой службы в своей стране.
警告	如果电源出现故障或中断，您将无法使用 Voice over IP (VoIP) 服务与紧急呼叫服务。电源恢复之后，您可能需要重新设置或重新配置设备，以便重新获得进入 VoIP 与紧急呼叫服务的权限。在美国，此紧急呼叫号码是 911。您必须知道本国的紧急呼叫号码。
警告	電源障害や停電の場合、ボイス オーバー アイピー (VoIP) サービスと緊急呼出しサービスは機能しません。電源の回復後、VoIP と緊急呼出しサービスにアクセスするには機器をリセットまたは再設定する必要があります。米国内の緊急呼出し番号は 911 です。お住まいの地域の緊急呼出し番号をあらかじめ調べておいてください。

Statement 1071—Warning Definition



Warning

IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Waarschuwing

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van de standaard praktijken om ongelukken te voorkomen. Gebruik het nummer van de verklaring onderaan de waarschuwing als u een vertaling van de waarschuwing die bij het apparaat wordt geleverd, wilt raadplegen.

BEWAAR DEZE INSTRUCTIES

Varoitus TÄRKEITÄ TURVALLISUUSOHJEITA

Tämä varoitusmerkki merkitsee vaaraa. Tilanne voi aiheuttaa ruumiillisia vammoja. Ennen kuin käsittelet laitteistoa, huomioi sähköpiirien käsittelemiseen liittyvät riskit ja tutustu onnettomuuksien yleisiin ehkäisytapoihin. Turvallisuusvaroitusten käännökset löytyvät laitteen mukana toimitettujen käännettyjen turvallisuusvaroitusten joukosta varoitusten lopussa näkyvien lausuntonumeroiden avulla.

SÄILYTÄ NÄMÄ OHJEET**Attention IMPORTANTES INFORMATIONS DE SÉCURITÉ**

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement.

CONSERVEZ CES INFORMATIONS**Warnung WICHTIGE SICHERHEITSHINWEISE**

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden.

BEWAHREN SIE DIESE HINWEISE GUT AUF.**Avvertenza IMPORTANTI ISTRUZIONI SULLA SICUREZZA**

Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di intervenire su qualsiasi apparecchiatura, occorre essere al corrente dei pericoli relativi ai circuiti elettrici e conoscere le procedure standard per la prevenzione di incidenti. Utilizzare il numero di istruzione presente alla fine di ciascuna avvertenza per individuare le traduzioni delle avvertenze riportate in questo documento.

CONSERVARE QUESTE ISTRUZIONI**Advarsel VIKTIGE SIKKERHETSINSTRUKSJONER**

Dette advarselssymbolet betyr fare. Du er i en situasjon som kan føre til skade på person. Før du begynner å arbeide med noe av utstyret, må du være oppmerksom på farene forbundet med elektriske kretser, og kjenne til standardprosedyrer for å forhindre ulykker. Bruk nummeret i slutten av hver advarsel for å finne oversettelsen i de oversatte sikkerhetsadvarslene som fulgte med denne enheten.

TA VARE PÅ DISSE INSTRUKSJONENE

Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. Você está em uma situação que poderá ser causadora de lesões corporais. Antes de iniciar a utilização de qualquer equipamento, tenha conhecimento dos perigos envolvidos no manuseio de circuitos elétricos e familiarize-se com as práticas habituais de prevenção de acidentes. Utilize o número da instrução fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham este dispositivo.

GUARDE ESTAS INSTRUÇÕES**¡Advertencia! INSTRUCCIONES IMPORTANTES DE SEGURIDAD**

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo.

GUARDE ESTAS INSTRUCCIONES**Varning! VIKTIGA SÄKERHETSANVISNINGAR**

Denna varningssignal signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanliga förfaranden för att förebygga olyckor. Använd det nummer som finns i slutet av varje varning för att hitta dess översättning i de översatta säkerhetsvarningar som medföljer denna anordning.

SPARA DESSA ANVISNINGAR**Figyelem FONTOS BIZTONSÁGI ELOÍRÁSOK**

Ez a figyelmeztető jel veszélyre utal. Sérülésveszélyt rejtő helyzetben van. Mielőtt bármely berendezésen munkát végezte, legyen figyelemmel az elektromos áramkörök okozta kockázatokra, és ismerkedjen meg a szokásos balesetvédelmi eljárásokkal. A kiadványban szereplő figyelmeztetések fordítása a készülékhez mellékelt biztonsági figyelmeztetések között található; a fordítás az egyes figyelmeztetések végén látható szám alapján kereshető meg.

ORIZZE MEG EZEKET AZ UTASÍTÁSOKAT!**Предупреждение ВАЖНЫЕ ИНСТРУКЦИИ ПО СОБЛЮДЕНИЮ ТЕХНИКИ БЕЗОПАСНОСТИ**

Этот символ предупреждения обозначает опасность. То есть имеет место ситуация, в которой следует опасаться телесных повреждений. Перед эксплуатацией оборудования выясните, каким опасностям может подвергаться пользователь при использовании электрических цепей, и ознакомьтесь с правилами техники безопасности для предотвращения возможных несчастных случаев. Воспользуйтесь номером заявления, приведенным в конце каждого предупреждения, чтобы найти его переведенный вариант в переводе предупреждений по безопасности, прилагаемом к данному устройству.

СОХРАНИТЕ ЭТИ ИНСТРУКЦИИ

警告 重要的安全性说明

此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾提供的声明号码来找到此设备的安全性警告说明的翻译文本。

请保存这些安全性说明

警告 安全上の重要な注意事項

「危険」の意味です。人身事故を予防するための注意事項が記述されています。装置の取り扱い作業を行うときは、電気回路の危険性に注意し、一般的な事故防止策に留意してください。警告の各国語版は、各注意事項の番号を基に、装置に付属の「Translated Safety Warnings」を参照してください。

これらの注意事項を保管しておいてください。

주의 重要 안전 지침

이 경고 기호는 위험을 나타냅니다. 작업자가 신체 부상을 일으킬 수 있는 위험한 환경에 있습니다. 장비에 작업을 수행하기 전에 전기 회로와 관련된 위험을 숙지하고 표준 작업 관례를 숙지하여 사고를 방지하십시오. 각 경고의 마지막 부분에 있는 경고문 번호를 참조하여 이 장치와 함께 제공되는 번역된 안전 경고문에서 해당 번역문을 찾으십시오.

이 지시 사항을 보관하십시오.

Aviso INSTRUÇÕES IMPORTANTES DE SEGURANÇA

Este símbolo de aviso significa perigo. Você se encontra em uma situação em que há risco de lesões corporais. Antes de trabalhar com qualquer equipamento, esteja ciente dos riscos que envolvem os circuitos elétricos e familiarize-se com as práticas padrão de prevenção de acidentes. Use o número da declaração fornecido ao final de cada aviso para localizar sua tradução nos avisos de segurança traduzidos que acompanham o dispositivo.

GUARDE ESTAS INSTRUÇÕES**Advarsel** VIGTIGE SIKKERHEDSANVISNINGER

Dette advarselssymbol betyder fare. Du befinder dig i en situation med risiko for legemeskade. Før du begynder arbejde på udstyr, skal du være opmærksom på de involverede risici, der er ved elektriske kredsløb, og du skal sætte dig ind i standardprocedurer til undgåelse af ulykker. Brug erklæringsnummeret efter hver advarsel for at finde oversættelsen i de oversatte advarsler, der fulgte med denne enhed.

GEM DISSE ANVISNINGER**تحذير****إرشادات الأمان الهامة**

يوضح رمز التحذير هذا وجود خطر. وهذا يعني أنك متواجد في مكان قد ينتج عنه التعرض لإصابات. قبل بدء العمل، احذر مخاطر التعرض للصدمات الكهربائية وكن على علم بالإجراءات القياسية للحيلولة دون وقوع أي حوادث. استخدم رقم البيان الموجود في أخطر كل تحذير لتحديد مكان ترجمته داخل تحذيرات الأمان المترجمة التي تأتي مع الجهاز. قم بحفظ هذه الإرشادات

Upozorenje VAŽNE SIGURNOSNE NAPOMENE

Ovaj simbol upozorenja predstavlja opasnost. Nalazite se u situaciji koja može prouzročiti tjelesne ozljede. Prije rada s bilo kojim uređajem, morate razumjeti opasnosti vezane uz električne sklopove, te biti upoznati sa standardnim načinima izbjegavanja nesreća. U prevedenim sigurnosnim upozorenjima, priloženima uz uređaj, možete prema broju koji se nalazi uz pojedino upozorenje pronaći i njegov prijevod.

SAČUVAJTE OVE UPUTE**Upozornění DŮLEŽITÉ BEZPEČNOSTNÍ POKYNY**

Tento upozorňující symbol označuje nebezpečí. Jste v situaci, která by mohla způsobit nebezpečí úrazu. Před prací na jakémkoliv vybavení si uvědomte nebezpečí související s elektrickými obvody a seznamte se se standardními opatřeními pro předcházení úrazům. Podle čísla na konci každého upozornění vyhledejte jeho překlad v přeložených bezpečnostních upozorněních, která jsou přiložena k zařízení.

USCHOVEJTE TYTO POKYNY**Προειδοποίηση ΣΗΜΑΝΤΙΚΕΣ ΟΔΗΓΙΕΣ ΑΣΦΑΛΕΙΑΣ**

Αυτό το προειδοποιητικό σύμβολο σημαίνει κίνδυνο. Βρίσκεστε σε κατάσταση που μπορεί να προκαλέσει τραυματισμό. Πριν εργαστείτε σε οποιοδήποτε εξοπλισμό, να έχετε υπόψη σας τους κινδύνους που σχετίζονται με τα ηλεκτρικά κυκλώματα και να έχετε εξοικειωθεί με τις συνήθειες πρακτικές για την αποφυγή ατυχημάτων. Χρησιμοποιήστε τον αριθμό δήλωσης που παρέχεται στο τέλος κάθε προειδοποίησης, για να εντοπίσετε τη μετάφρασή της στις μεταφρασμένες προειδοποιήσεις ασφαλείας που συνοδεύουν τη συσκευή.

ΦΥΛΑΞΤΕ ΑΥΤΕΣ ΤΙΣ ΟΔΗΓΙΕΣ**אזהרה****הוראות בטיחות חשובות**

סימן אזהרה זה מסמל סכנה. אתה נמצא במצב העלול לגרום לפציעה. לפני שתעבוד עם ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים ולהכיר את הנהלים המקובלים למניעת תאונות. השתמש במספר ההוראה המסופק בסופה של כל אזהרה כדי לאתר את התרגום באזהרות הבטיחות המתורגמות שמצורפות להתקן.

שמור הוראות אלה**Opomena VAŽNI BEZBEDNOSNI NAPATCTVIJA**

Симболот за предупредување значи опасност. Се наоѓате во ситуација што може да предизвика телесни повреди. Пред да работите со опремата, бидете свесни за ризикот што постои кај електричните кола и треба да ги познавате стандардните постапки за спречување на несреќни случаи. Искористете го бројот на изјавата што се наоѓа на крајот на секое предупредување за да го најдете неговиот период во prevedените безбедносни предупредувања што се испорачани со уредот.

ЧУВАЈТЕ ГИ ОБИЕ НАПАТСТВИЈА

Ostrzeżenie WAŻNE INSTRUKCJE DOTYCZĄCE BEZPIECZEŃSTWA

Ten symbol ostrzeżenia oznacza niebezpieczeństwo. Zachodzi sytuacja, która może powodować obrażenia ciała. Przed przystąpieniem do prac przy urządzeniach należy zapoznać się z zagrożeniami związanymi z układami elektrycznymi oraz ze standardowymi środkami zapobiegania wypadkom. Na końcu każdego ostrzeżenia podano numer, na podstawie którego można odszukać tłumaczenie tego ostrzeżenia w dołączonym do urządzenia dokumencie z tłumaczeniami ostrzeżeń.

NINIEJSZE INSTRUKCJE NALEŻY ZACHOWAĆ**Upozornenie DÔLEŽITÉ BEZPEČNOSTNÉ POKYNY**

Tento varovný symbol označuje nebezpečenstvo. Nachádzate sa v situácii s nebezpečenstvom úrazu. Pred prácou na akomkoľvek vybavení si uvedomte nebezpečenstvo súvisiace s elektrickými obvodmi a oboznámte sa so štandardnými opatreniami na predchádzanie úrazom. Podľa čísla na konci každého upozornenia vyhľadajte jeho preklad v preložených bezpečnostných upozorneniach, ktoré sú priložené k zariadeniu.

USCHOVAJTE SI TENTO NÁVOD**Opozorilo POMEMBNI VARNOSTNI NAPOTKI**

Ta opozorilni simbol pomeni nevarnost. Nahajate se v situaciji, kjer lahko pride do telesnih poškodb. Preden pričnete z delom na napravi, se morate zavedati nevarnosti udara električnega toka, ter tudi poznati preventivne ukrepe za preprečevanje takšnih nevarnosti. Uporabite obrazložitevno številko na koncu posameznega opozorila, da najdete opis nevarnosti v priloženem varnostnem priročniku.

SHRANITE TE NAPOTKE!**警告****重要安全性指示**

此警告符號代表危險，表示可能造成人身傷害。使用任何設備前，請留心電路相關危險，並熟悉避免意外的標準作法。您可以使用每項警告後的聲明編號，查詢本裝置隨附之安全性警告譯文中的翻譯。請妥善保留此指示