



CHAPTER 1

Introduction to Cisco EnergyWise Orchestrator

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Overview

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Cisco EnergyWise Orchestrator

- **Measure**—Orchestrator identifies the time that a device is in each power state and the usage data for PCs and EnergyWise-enabled devices (for example, IP phones, switches, routers, and wireless access points).
- **Monitor and report**—Data collected by Orchestrator is reported in charts and graphs that show device and user activity.
- **Regulate**—Orchestrator manages the power states of network-connected devices by direct commands and scheduled policies that you define.

Orchestrator Features

- Administration of device power states from a web-based administrator console.
- Device management in real time or by using automatic, policy-based control.
- Agent-based, nonintrusive PC power management that ensures zero impact to end users, business applications, or IT maintenance activity.
- Collection of usage information for PCs so that you can create power management policies.

- Remote access to PCs and Wake on LAN support for PCs. End users can wake Orchestrator client PCs from a remote location over the web and schedule wake requests to work around scheduled maintenance windows.
- Group-oriented administration with role-based security privileges.
- Event reporting for analysis and optimization. Events on devices are recorded and reported to a central server.
- Dashboard views for high-level reporting of environmental impact.
- Unified control of EnergyWise-enabled devices through network-based measurement of power draw and network-based control of device power levels. (Requires EnergyWise-enabled network hardware and Power over Ethernet [PoE] devices.)

Configuring Power Management in Orchestrator

Power management is the ability to move devices into appropriate power states as demand requires by putting devices into the right power state for your needs. For example, **on** is often the right power state for a device. Successfully waking a computer at the correct time is just as important as putting it to sleep at the right time.

The first step is to determine how you want to enforce power management in your network by determining how energy is being used.

A *device* can be a PC, or EnergyWise-enabled router, switch, IP phone, or wireless access point (WAP).

Orchestrator runs in two modes: Operational and Baseline. Operational mode enforces policies. Baseline mode only measures energy use.

- In Operational server mode, Orchestrator uses *policies* to manage network-connected PCs. A policy can be assigned to one or more devices in any group.
- In Baseline mode, Orchestrator collects data for all devices as each device connects to the system. The data updates each time a device checks in. You can see this data in different reports and device views.

Policies settings:

- Scheduled PC power schemes that specify the length of time that a user is inactive before a device transitions to a lower power state. Each scheme can have a unique schedule.
- An unscheduled PC power scheme that runs in the background when no other power schemes are scheduled.
- Scheduled power level changes (such as wake, shut down, sleep, or restart), each with a unique schedule. Power-level changes apply to PCs or PoE devices.
- PC wake-up settings.
- Logging and monitoring settings for PC clients.

Orchestrator assigns policies manually, or you can create assignment rules. Each device can have only one assigned policy, but each policy can have multiple schemes and power level changes, each with its own schedule.



Note

All power settings in policies apply to PCs. For other types of devices, only scheduled power state changes apply. Orchestrator collects data for all device types for reporting purposes.

Devices can be assigned to administrative groups, either manually or through assignment rules that you create. You can use groups to organize devices logically and to apply role-based permissions for delegated administration.

Orchestrator System Components

Figure 1-1 shows the Orchestrator components before integration with Cisco Energywise.

Figure 1-1 Orchestrator System Components

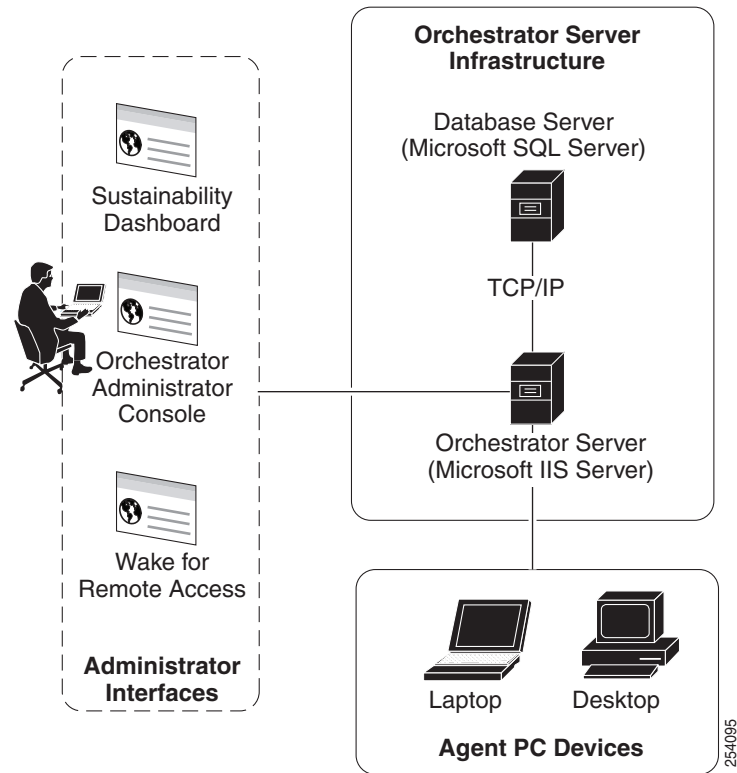


Figure 1-2 show the same Orchestrator components after integration with Cisco EnergyWise devices:

Figure 1-2 Orchestrator System Components for EnergyWise Devices

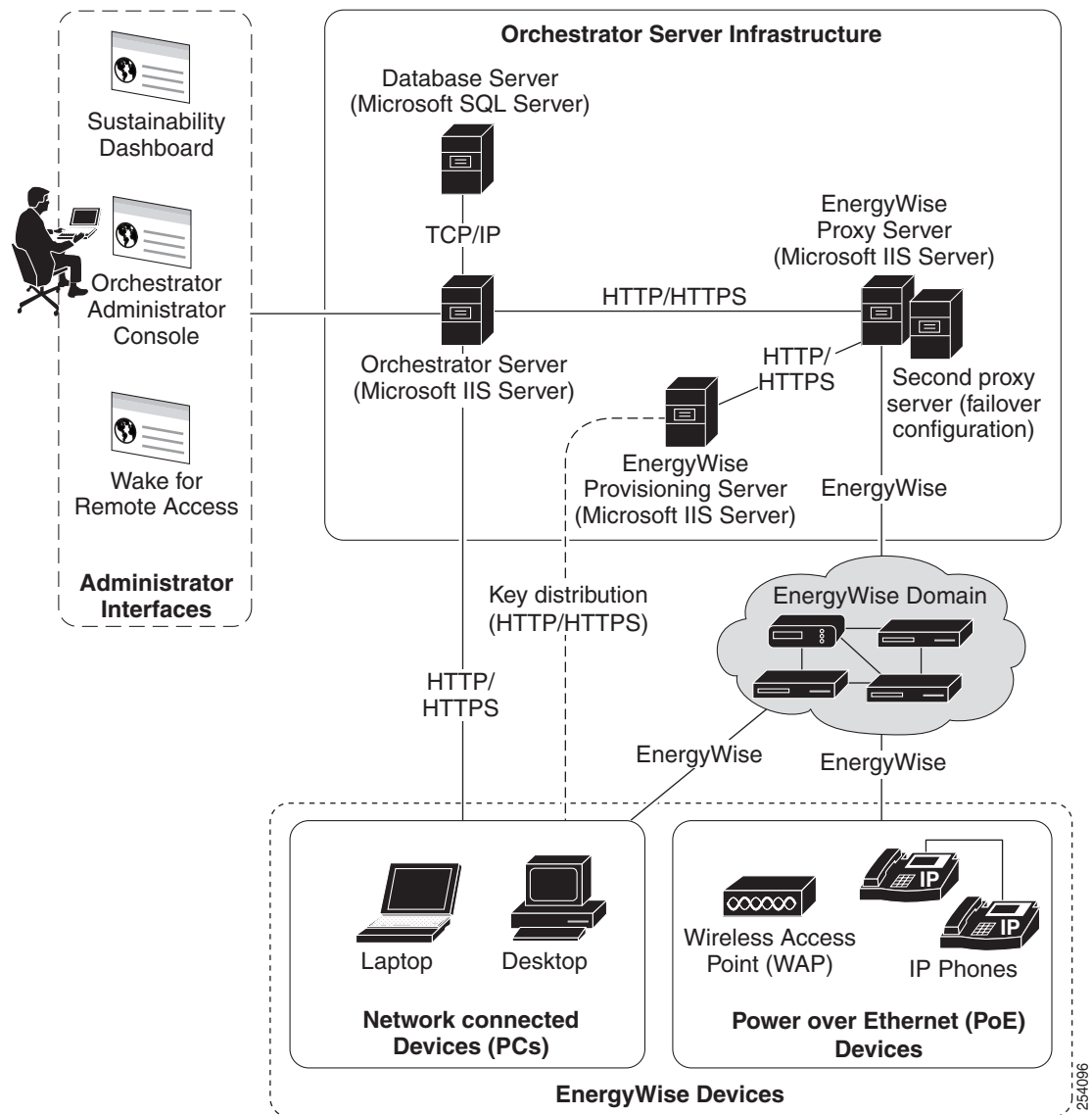


Table 1-1 Orchestrator System Components for EnergyWise Devices

Component	Description
Orchestrator server	Manages policy distribution, sends power-state change instructions to devices, and captures data to send to the Orchestrator database. The Orchestrator server communicates directly with PCs and indirectly with EnergyWise-enabled devices through the EnergyWise proxy server.
Enterprise power management database	An Microsoft SQL server database that stores power state and other device data sent to the server.

Table 1-1 Orchestrator System Components for EnergyWise Devices (continued)

Component	Description
Administrator web server	A computer running Microsoft IIS 6.0. The administrator console is a Web application hosted on an IIS server. You use the administrator console to <ul style="list-style-type: none"> • Configure and schedule power state changes. • Add, arrange, remove, and monitor devices. • Manage and delegate permissions. • Perform other management tasks.
EnergyWise proxy server	A bridge between the Orchestrator server and the EnergyWise protocol. The proxy service acts as a proxy for EnergyWise devices to the Orchestrator server. It polls EnergyWise attributes (such as device and power usage information), sending EnergyWise commands, and sending EnergyWise status to the Orchestrator server.
EnergyWise provisioning server	Manages the assignment of EnergyWise domains to instances of the EnergyWise Proxy Service.
Agent PC devices	Desktop and laptop PCs (sometimes referred to as clients) that receive and enforce power management instructions from the Orchestrator server.
PoE devices	Network connected devices that support the Cisco EnergyWise protocol, such as Catalyst Power over Ethernet (PoE) switches, all Cisco PoE IP phones and wireless access points. Each device in an EnergyWise domain is called an end point.

**Note**

In a basic installation, the Proxy Service and Provisioning Service can run on the same system as the Orchestrator Power Management Server. In large installations, multiple power management servers and proxy servers can provide load balancing.

Cisco EnergyWise

Orchestrator supports EnergyWise Phase 2. You can configure Orchestrator to recognize IP phones and wireless access points) that are connected to Cisco network devices.

For Cisco-specific information, see the EnergyWise configuration and deployment guides on Cisco.com.

For a list of supported devices, see the *Release Notes for Cisco EnergyWise, EnergyWise Phase 2* on Cisco.com.

PC Power States and Sleep

Orchestrator monitors these PCs power states: *on*, *idle*, *sleep*, *hibernate*, and *off*.

When a PC is on and being used, it consumes 60 to 250 W. You can put it into low-power states:

- Sleep (also called standby)—Uses the least amount of power while the computer is on. Open programs or documents stay open when the computer is in sleep mode.

- Hibernate—Saves open documents to the disk, closes programs, and turns the computer off.
- Off—All programs are closed, the operating system is shut down, and the computer is powered off.

Getting Started with Power Management

You can use the Orchestrator Administrator console to determine the energy use of network devices and to set policies with scheduled power schemes to enforce power management.

You can set up administrative groups and power-management policies in any order. You can define security groups first to control administrative permissions and access to network devices and power management settings.

	Task	Description
Step 1	In your web browser, enter the URL for the local web site on the computer where you installed the Orchestrator server, such as <code>http://hostname/Admin/</code> where hostname = Orchestrator power management server name. For details, see the “Open the Administrator console” section on page 1-7.	Open the Administrator console to see and manage devices, groups, policies, and server settings.
Step 2	In the Devices menu, choose Filtered Search , and click the Groups, Policies, or PC Subnets tab to filter the view. Or, in the Search tab, choose different options in the drop-down filter lists to show sets of devices.	Display devices to get an overall picture of connected devices. Use different filtering and sorting options to see different sets of devices.
Step 3	In the Devices menu, choose Manage Groups .	Create groups organize to control access to devices.
Step 4	In the Devices menu <ul style="list-style-type: none"> • To manually assign devices to specific groups, choose Filtered Search. • To automatically assign devices to specific groups, choose Configure Group Assignment Rules. 	Assign devices to administrative groups manually or through assignment rules.
Step 5	(Optional) To configure security settings, in the Permissions menu, choose Edit Roles .	(Optional) Configure security settings to control administrator access to devices and policies.
Step 6	Determine initial policy settings from user and system activity. For details, see the “Gathering Data for and Creating Initial Power Management Policies” chapter in the <i>Cisco EnergyWise Orchestrator Installation Guide</i> and the “Data Availability Report” section on page 9-30.	Run Orchestrator in Baseline mode for 2 weeks to monitor energy usage and determine policy assignment. Note To display data for the Operational State report, you must first run the summarization process. For details, see the “Data Summarization Process Overview” section on page 7-1.

	Task	Description
Step 7	In the Policies menu, choose Edit Policies . Use the tabs and buttons to control the policy settings and schedule including schemes, power level changes, and power state transition rules.	Determine the policies for enforcing power management. Change or create policies.
Step 8	In the Devices menu, choose Filtered Search for manual assignment. Choose Configure Policy Assignment Rules to automatically assign policies to devices.	Assign policies to devices manually or through assignment rules.
Step 9	In the Server menu, choose Configure Server Settings . For Server mode, choose Operational .	Begin policy enforcement by setting Orchestrator to Operational mode.
Step 10	In the Reports menu, choose a report type or event view.	Review reports on user and device activity.

Open the Administrator console

You use the Orchestrator Administrator console to configure and schedule power state changes; add, arrange, remove, and monitor devices; manage and delegate permissions; and perform other management tasks.

In your web browser, enter the URL for the local web site on the computer where you installed the Orchestrator server, such as **http://hostname/Admin/default.aspx** where *hostname* = Orchestrator power management server name.

For example, **http://localhost/admin/default.aspx** or **http://myPCname.myDomain.local/admin/default.aspx**.



Note

If Windows Firewall is enabled on the Orchestrator server, you will need to make sure v TCP port 80 is added to the exceptions list. For details see the [“Configuring Windows Firewall To Allow Server Access to Web Components”](#) section on page 3-6.

■ Open the Administrator console