



# CHAPTER 1

## Introduction to Cisco EnergyWise Orchestrator

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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 console.
- Device management in real time or using policies and scheduled power schemes.
- Agent-based PC power management with minimal impact to end-users, business applications, or IT maintenance activity.
- The ability to collect actual usage information for PCs to help you author intelligent power management policies.
- Remote access to office PCs and Wake on LAN support. Users can wake client PCs over the Web, schedule requests to work around scheduled maintenance windows.
- Group-oriented administration with role-based security privileges.
- Event reporting for analysis and management
- Dashboard views for high-level reporting of environmental impact.

- Unified control of devices through Cisco EnergyWise-enabled devices through network-based measurement of power draw and network-based control of device power levels. (Requires Cisco EnergyWise-enabled network hardware and Power over Ethernet [PoE] devices)

## Configuring Power Management

From a PC perspective, successfully waking a computer at the correct time is just as important as putting it to sleep at the right time.

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

In Operational server mode, Orchestrator begins collecting data for all devices as each device connects to the system. The data updates each time a device checks in. You can then display this data in different reports and device views.

**Note**

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Orchestrator runs in either Operational and Baseline mode. Policies are enforced in Operational mode. Baseline mode is used for measuring energy use only.

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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.

Policies contain these types of settings:

- Scheduled PC power schemes that specify the amount of time of user inactivity before a device changes to a lower power state. Each scheme can have a unique schedule.
- An unscheduled PC power scheme that runs in the background 24/7 when no other power schemes are scheduled.
- Scheduled power level changes (such as wake, shutdown, sleep, or restart). Power level changes apply to PCs or PoE devices.
- Device wake-up settings.
- Logging and data collection settings for PCs.

You can assign policies manually or through assignment rules that you create. 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**

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

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

# System Components

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

**Figure 1-1 Orchestrator System Components**

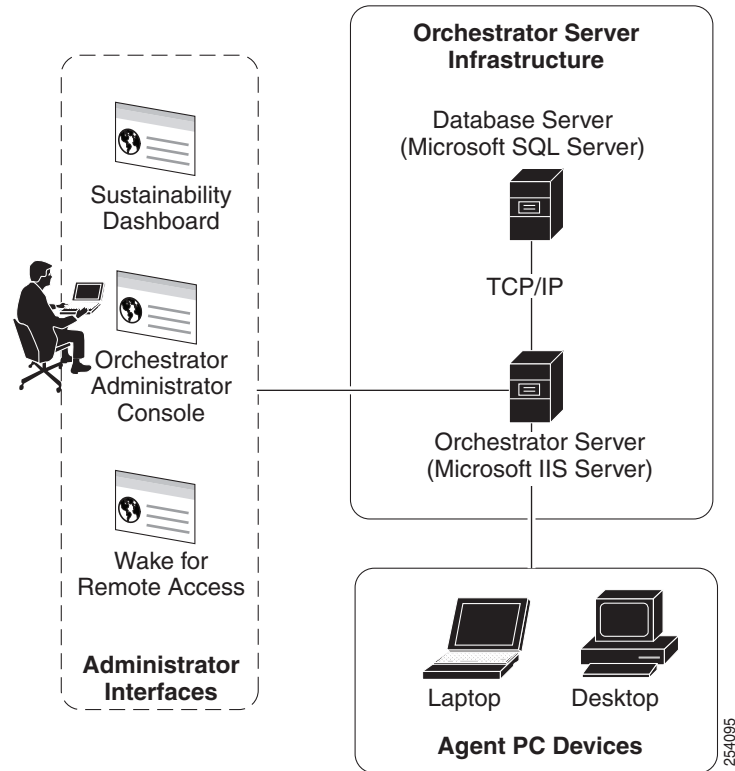


Figure 1-2 show the same Orchestrator components after integration with Cisco EnergyWise devices:

Figure 1-2 Orchestrator System Components for EnergyWise Devices

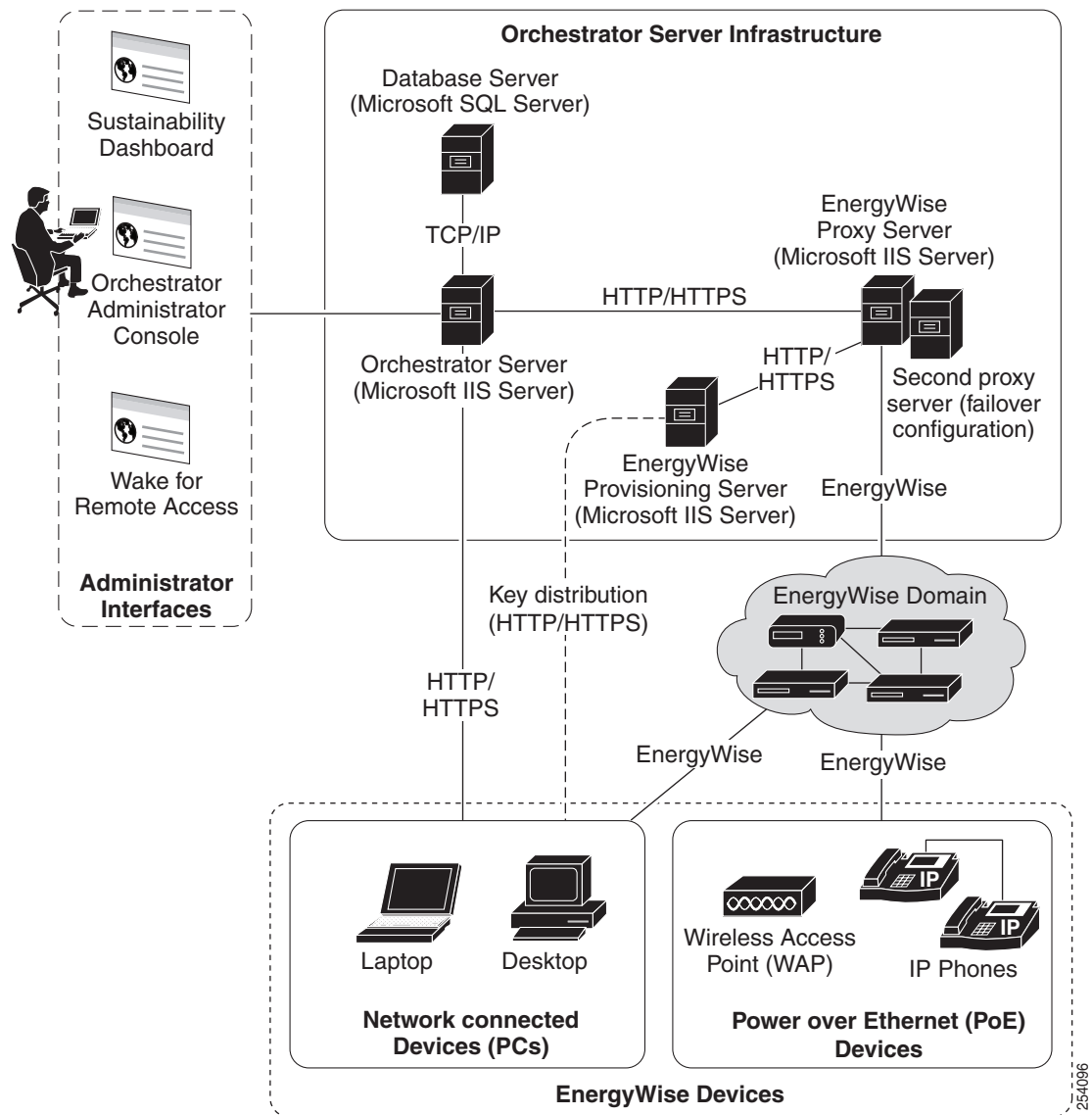


Table 1-1 Orchestrator System Components for EnergyWise Devices

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"> <li>• Configure and schedule power state changes.</li> <li>• Add, arrange, remove, and monitor devices.</li> <li>• Manage and delegate permissions.</li> <li>• Perform other management tasks.</li> </ul>
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 EnergyWise proxy server and provisioning server can run on the same system as the Orchestrator power management server. In large installations, multiple power management servers and proxy servers can provide for load balancing.

## Cisco EnergyWise

Orchestrator supports Cisco EnergyWise Phase 2. You can configure Orchestrator to recognize IP phones and wireless access points that are connected to Cisco network devices. For a list of supported devices, see the release notes for Cisco EnergyWise, EnergyWise Phase 2, on Cisco.com.

For more details on EnergyWise support in Orchestrator, see [Chapter 4, “Configuring Orchestrator for EnergyWise Devices.”](#)

For other information about EnergyWise, see the Cisco EnergyWise documentation available on Cisco.com.

## Getting Started with Power Management

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## Setting Up Power Management

The administrator console shows you how devices use energy. You can set up policies with scheduled power schemes to enforce power management.

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

Step	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 <i>Open the Administrator console</i> .	Open the Administrator console to display and manage devices, groups, policies, and server settings.
Step 2	On the Devices menu, click <b>Filtered Search</b> , and click the tab (Groups, Policies, or Subnets) that you want to use to filter the display. In the Search tab, select different options in the drop-down filter lists to display the sets of devices.	Display devices to get an overall picture of what devices are connecting to Orchestrator. Use different filtering and sorting option to see different sets of devices.
Step 3	On the Devices menu, select <b>Manage Groups</b> .	Create groups that reflect your needs for organizing and controlling access to devices.
Step 4	On the Devices menu, click <b>Filtered Search</b> for manual assignment. To automatically assign devices to specific groups, on the Devices menu, click <b>Configure Group Assignment Rules</b> .	Determine how you want to see and work with sets of devices in administrative groups. Assign devices to groups manually or through assignment rules.
Step 5	To configure security settings: On the Permissions menu, click <b>Edit Roles</b> .	Configure security settings to control administrator access to devices and policies. (optional)
Step 6	To run Orchestrator in Baseline mode, see <a href="#">Chapter 8, “Gathering Data and Creating Initial Power Management Policies”</a> , and the <a href="#">“Determining Initial Policy Settings from User and System Activity”</a> section on page 8-5.  See also the “Viewing Reports” chapter of the <i>Cisco EnergyWise Orchestrator Administrator Guide</i> .	Run Orchestrator in Baseline mode for two weeks to monitor energy usage and determine policy assignment.  <b>Note</b> To display data for the Operational State report, you must first run the summarization process. For details, see the “Data Summarization Process” section in the <i>Cisco EnergyWise Orchestrator Administrator Guide</i> .

Step	Task	Description
Step 7	On the Policies menu, click <b>Edit Policies</b> . Click the various tabs and buttons on this page to control the policy settings and to schedule including schemes, power-level changes, and power-state transition rules.	Determine the policies you need to enforce power management in your organization. Modify existing policies or create new ones to meet your needs.
Step 8	On the Devices menu, click <b>Filtered Search</b> for manual assignment. To automatically assign policies to devices, on the <b>Devices</b> menu, click <b>Configure Policy Assignment Rules</b> .	Assign policies to devices manually or through assignment rules.
Step 9	In the Server menu, click <b>Configure Server Settings</b> . For Server mode, click <b>Operational</b> .	Begin policy enforcement by setting Orchestrator to Operational mode.
Step 10	In the Reports menu, click a report type or event display.	Review reports on user and device activity to fine tune group and policy assignment.

## Orchestrator Implementation Phases

1. Preparing for installation—This includes obtaining the necessary hardware, IIS, and database servers, installing any software required for running the Orchestrator system or administrator console, setting up the database, configuring any PC clients for Wake on LAN, configuring PCs and other devices for Cisco EnergyWise, setting permissions, and deciding how to roll out to clients and notifying users.

Where to start: [“Preparing the Server Installation Environment” section on page 2-6.](#)

2. Installation—You install the Orchestrator software and perform tests to validate the installation and system connections.

All of the installation procedures are in this guide. Depending on your organization and system, you might not need to complete all of them.

Where to start: [“Installing and Setting Server Components” section on page 3-1.](#)

3. Baseline data collection—Before you enforce power management policies, you need to establish the baseline-level power use without using any power management. Collecting baseline data involves one process for PCs and another for other EnergyWise devices.

Creating security groups: While the server is collecting energy use data from PCs, you can plan and configure groups for delegated administration.

4. Enforcement—After you determine the baseline energy use for devices, you create initial power management policies based on user activity. Then you can start enforcing policies on devices.

