



CHAPTER 8

Gathering Data and Creating Initial Power Management Policies

- [Establishing the Baseline Level of Energy Usage, page 8-1](#)
- [Setting the Server to Baseline Mode, page 8-2](#)
- [Selecting the 2-Week Baseline Period, page 8-3](#)
- [Generating the Baseline Numbers for Future Energy-Savings Reports, page 8-4](#)
- [Comparing Energy Use with User Activity, page 8-4](#)
- [Determining Initial Policy Settings from User and System Activity, page 8-5](#)
- [Determining Whether Devices Are Following Policy Instructions, page 8-8](#)

Establishing the Baseline Level of Energy Usage

When measuring savings achieved through policy enforcement, an accurate starting point, or *baseline*, is important.

- [Overview of Baseline Data Collection Process, page 8-1](#)
- [Criteria for Selecting the Baseline Date Range, page 8-2](#)
- [Additional Required Reporting Information, page 8-2](#)

Overview of Baseline Data Collection Process

The baseline is the amount of energy that devices use without centralized power management. It is important in determining initial power management policies and in post-enforcement reporting. Only with an accurate baseline can you obtain reliable results when measuring savings from policy enforcement.

For PC clients in the Orchestrator system, you complete the baseline data collection process after installation but before you enforce power management policies:

1. Run the system with the Baseline server mode enabled for several weeks of normal network operation.

During this time, clients report their use to the server, energy use is measured, but no policies are enforced.

2. Generate a data availability report that shows the number of clients reporting to the server each day during that period of time.
3. From the data availability report, select a 2-week period during which a consistent number of clients reported to the server each day.

Make sure that this 2-week period meets the requirements in the [“Criteria for Selecting the Baseline Date Range” section on page 8-2](#).

4. Run a baseline report for the 2-week period to obtain the *baseline number* for the average rate of energy use for the PC CPU and display during that time specified. The baseline numbers are used in system-health and energy-savings reports.

For non-PC EnergyWise devices, the baseline energy usage levels are calculated automatically:

1. Devices are assumed to be always on at power level 10.
2. Power draw depends on the device and its version, with values hard-coded into the device.

Criteria for Selecting the Baseline Date Range

Within the time period during which you let the system run in Baseline mode, you select a 2-week time span that is used to calculate the baseline numbers. To get an accurate baseline calculation, the 2-week time period should meet these criteria:

- All days must reflect normal business operation.
Holidays, hardware transitions, power outages, and other events that affect normal computer operation alter the data collected, producing inaccurate baseline.
- The time span should show a consistent number of devices reporting to the server, and the number should be 90 percent or more of the licensed devices.

Additional Required Reporting Information

To determine the baseline for PCs, in addition to the date range, you need to complete the Global Settings page in the Sustainability Dashboard so that the values reflect your environment. The values include:

- The per-kilowatt hour (kWh) rate that you pay for electricity.
- Your currency unit.
- (Optional) Carbon emissions settings. Default values are provided, but you can change them by using the references on the Global Settings page.

Setting the Server to Baseline Mode

Enable the Baseline server mode in the Administrator console when you want to measure energy usage without enforcing policies.

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- Step 1** In the Orchestrator administration console, from the Server menu, choose **Configure Server Settings**.
 - Step 2** For Server mode, click **Baseline**.
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After you set the server to Baseline mode, let it run for several weeks of normal operation.

**Note**

The server must remain in Baseline mode throughout the entire data-collection period. If you put into Enforcement mode, reporting data does not accurately reflect normal energy use.

Selecting the 2-Week Baseline Period

In the Sustainability Dashboard, you can run a report to determine which 2-week period is the best for calculating the baseline.

- You understand the baseline data collection process described in the [“Establishing the Baseline Level of Energy Usage”](#) section on page 8-1.
- The server has been running in Baseline mode for at least 2 weeks.

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- Step 1** Open the Sustainability Dashboard, and click the **Baseline Report** tab.
- Step 2** Choose the top-level group in the hierarchy so that you are reporting on all groups.
- Step 3** For Query Type, select **Data Availability**, enter the start and end dates for the time period during which the server was set to Baseline mode, and click **Run**.
- Step 4** In the data returned, determine the 2-week period that meets the criteria for selecting the baseline date range, specified in the [“Establishing the Baseline Level of Energy Usage”](#) section on page 8-1.
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After you use the criteria specified to determine the start and end dates of the baseline data period, you complete the baseline process by running these reports against that time period:

- PC State and User Activity report in the Administrator console. This shows you the gaps between user activity and energy use, and your initial policies can address the areas where the gaps are widest.
- Baseline report in the Sustainability Dashboard. This calculates a baseline number that you enter in the Global Settings page of the dashboard. Future reports that show energy savings depend on this baseline number.

See the [“Generating the Baseline Numbers for Future Energy-Savings Reports”](#) section on page 8-4.

For more information see these topics in the *Cisco EnergyWise Orchestrator Administrator Guide*.

- Viewing Reports
- Data Availability Report
- Baseline Report

Generating the Baseline Numbers for Future Energy-Savings Reports

After you select the baseline date range, you can obtain the CPU and display baseline numbers.

- Make sure that you have run the Data Availability report, described in the [“Selecting the 2-Week Baseline Period”](#) section on page 8-3, and determined the baseline period start and end dates from that report.

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- Step 1** Open the Sustainability Dashboard, and click the **Baseline Report** tab.
- Step 2** Choose the top-level group in the hierarchy so that you are calculating the number for all groups. Alternatively, if you have designated a first-phase set of devices that includes a representative sampling of your network, select those devices.
- Step 3** For Query Type, select **Baseline**, enter the start and end dates for your baseline period, and click **Run**. For details on determining which two-week period is the best to select for calculating the baseline, see the [“Selecting the 2-Week Baseline Period”](#) section on page 8-3.
- The baseline numbers for PC CPU and display are generated and entered as the *Average kWh per PC per year* values on the Global Settings page in the Sustainability Dashboard. These values are used in subsequent reports and charts that you generate to show energy savings.
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Comparing Energy Use with User Activity

You determine initial policy settings by viewing the level of energy usage without power management along side the energy spent from user activity.

This task assumes the following:

- You understand the baseline data collection process described in the [“Establishing the Baseline Level of Energy Usage”](#) section on page 8-1.
- You have followed the steps in the [“Selecting the 2-Week Baseline Period”](#) section on page 8-3.

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- Step 1** On the Reports menu, click **Operational State Report - PC State and User Activity**.
- Step 2** Enter the appropriate dates in the Starting and Ending boxes. In this case, enter the start and end dates of your baseline data collection period.
- Step 3** For View, select **By day**.
- Step 4** Click **Search**.

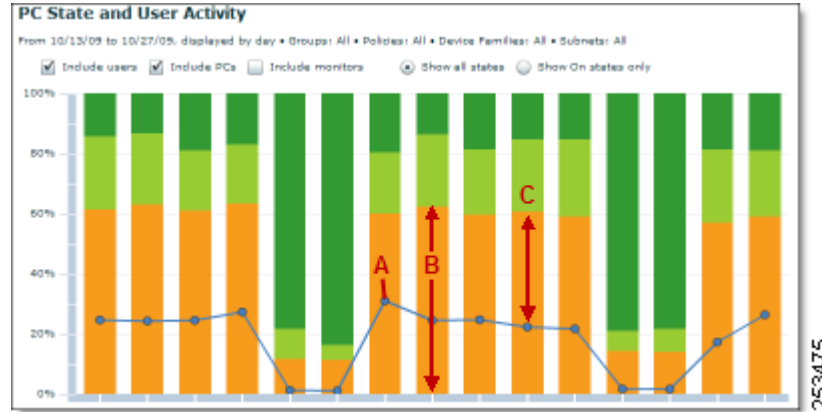


Note Typically the baseline data collection period involves all PC clients in the system. If you are using only a subset, use the **Groups** or **Subnets** filters to run the report on the relevant computers.

- Step 5** In the report display, enable these settings:
- **Include users.**

- **Include PCs** (you can enable **Include monitors** as necessary).
- Select **Show all states** or **Show On states only**, depending on your viewing preference.

Figure 8-1 Report Showing the Daily PC and User Activity Over 2 Weeks



In [Figure 8-1](#), compare the percentage of time that users are active (**A**) with the percentage of time that the computers and monitors are on (**B**). The space between them (**C**) is the area of potential savings from policy enforcement.

After completing this task, follow the instructions in the [“Generating the Baseline Numbers for Future Energy-Savings Reports”](#) section on page 8-4. To set policies, see the [“Determining Initial Policy Settings from User and System Activity”](#) section on page 8-5.



Tip After the system is running with policies enforced, you can run this report again to compare the total energy use with the original baseline report.

Determining Initial Policy Settings from User and System Activity

This topic describes how to display a user and system activity report, which you use to determine how to optimize power use through power management policies.

After you run the system in Baseline mode for at least 2 weeks of normal operation, determine policy settings. You will see hourly activity over a few days to see trends in user activity that you can build policies around.

- Step 1** On the Reports menu, click **Operational State Report - PC State and User Activity**.
- Step 2** In the Starting and Ending fields, enter a date range that is 4 days within your normal business week. For example, Monday–Thursday for a Monday–Friday week.
- Step 3** For View, select **By hour**.
- Step 4** Click **Search**.



Note Typically, the baseline data collection period involves all PC clients in the system. If you are using only a subset, use the **Groups** or **Subnets** filters to run the report on the relevant computers.

Step 5 In the report display, enable these settings:

- **Include users.**
- **Include PCs** (you can enable **Include monitors** as necessary).
- Select **Show all states** or **Show On states only**, depending on your viewing preference.

The graph should show a trend of higher user activity during working hours, tapering off toward the end of the work day.

Step 6 If the graph shows consistent use over the weekdays, change the date range to 1 day, Tuesday or Wednesday:

- Change the dates on the left so that both the Starting and Ending fields show the same date.
- Click **Search**.



Note If the 4-day graph shows inconsistent usage, find a different 4-day date range within the baseline period that shows consistent and predictable use before you display only 1 day.

Step 7 Note the times when user activity increases and decreases during the day.

Step 8 Use this data to create your initial power management policies.

Figure 8-2 is an example that shows user and system activity during 1 day.

Figure 8-2 User and System Activity During 1 Day

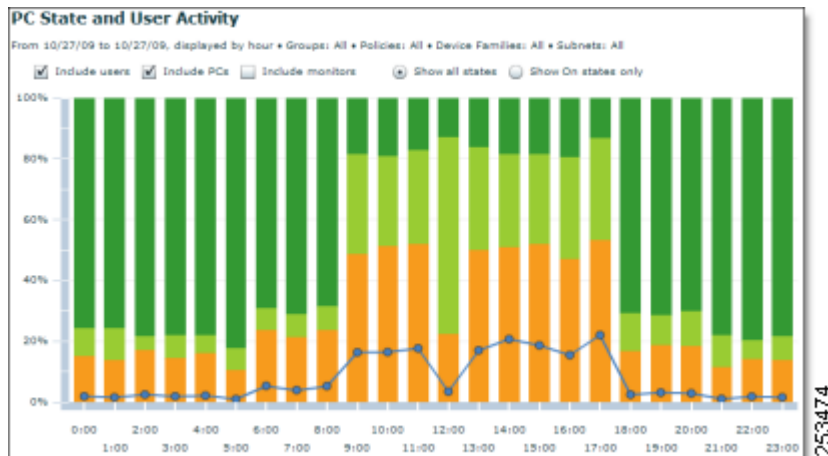


Figure 8-3 shows most of the user activity occurring between 6:00am and 6:00pm, so it might make sense to configure power schemes to match this activity level.

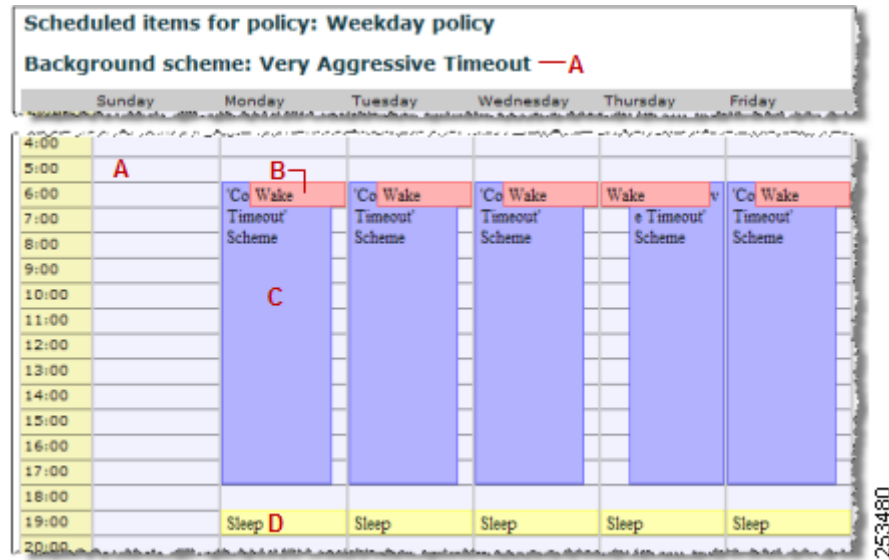
In a weekday policy based on this data, you might include these:

- A—Background scheme that changes computers to standby mode after a short period of inactivity, for example, after 10 minutes of idle time.

- B—Scheduled power-state change that wakes computers at 6:00 a.m.
- C—Daytime scheme that increases the amount of idle time before PCs change to standby mode.
- D—Scheduled power-state change at 7:00 p.m. that changes computers to sleep mode.

This step is optional, because if no scheme is scheduled, the background scheme will take effect, and the computers will transition to sleep when idle for the amount of time you specified.

Figure 8-3 Example Policy Created Based On User Activity



After you create your initial policies, you assign them to devices. After that, you can refine them to include assignment rules and other settings.

For more information, see “Managing Policies” and “Assign Policies To Devices” in the *Cisco EnergyWise Orchestrator Administrator Guide*.

Enforcing Policies

After you determine initial policies and assign them to devices, you can take the server out of Baseline mode to start measuring and managing power use on the devices.

This topic assumes either of the following situations:

- You have created initial power management policies after completing the baseline data collection phase, and you have assigned the policies to devices.
- You have set the server to Baseline mode for another reason, such as at the suggestion of a Technical Support representative for troubleshooting purposes.

If you have not obtained baseline numbers or created initial policies yet, see an overview of the process at Establishing the baseline level of energy use.

If you have created policies but you have not assigned them to devices, see “Assign Policies To Devices” in the *Orchestrator Administrator Guide*.

When you are ready to start enforcing policies, complete the procedure.

- Step 1** Make sure that the policies you're using are not disabled:
- On the **Policies** menu, click **Edit Policies**, and then select a policy name in the list.
 - Confirm that the **Do not enforce this policy** box is not selected.

Figure 8-4 Do Not Enforce This Policy Box

The screenshot shows a configuration form for a policy. The 'Policy:' field contains 'Work Day, 9 to 6'. The 'Description:' field contains 'Normal work day policy'. A checkbox labeled 'Do not enforce this policy' is checked and highlighted with a red box. A vertical label '263930' is visible on the right side of the form.

- Step 2** On the **Server** menu in the Administrator console, click **Configure Server Settings**.
- Step 3** For **Server mode**, select **Operational**.

When the server is in Operational mode, devices follow policy instructions and device data is reported to the Orchestrator database.

Determining Whether Devices Are Following Policy Instructions

This topic shows you how to use event log data to quickly determine whether devices successfully transition power states according to policy instructions.

Specifically, the section describes how to:

- Display one day of system and user activity for PC clients that have the same policy assignment.
- Compare activity with the policy settings.

- Step 1** On Reports menu, click **Operational State Report - PC State and User Activity**.
- Step 2** In the navigation panel on the left, under Chart:
- Enter the same date for both the start and end dates.
 - For View, select **By hour**.
- Step 3** Under Device Filter, use the Policies filter to specify the policy that you want to check.
- Step 4** Click **Search**.
- Step 5** In the report display, enable these settings:
- Include users**.
 - Include PCs** (you can enable **Include monitors** as necessary).
 - Select **Show all states** or **Show On states only**, depending on your viewing preference.
- Step 6** Confirm that the policy settings match the activity. If you are not sure, verify the policy settings:
- From the Policies menu, click **Edit Policies**.

- b. Select the policy, and click the **Schedule** tab.
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