Data Centers parent guide

You do not need to be an expert to read this book together. Your job is to ask how the explanation works and give the learner room to think.

What this book helps explain

Follow information, electricity, heat and local effects through the same facility.

Three short conversations

First, ask: If space is cold, can an orbiting computer simply stop needing cooling equipment?

Next, read “Electricity for an hour” together. Ask the learner to draw the idea and explain one unfamiliar term. Use the glossary rather than guessing.

Then use the activity below. Let the learner try before reading the answers on the next page. Ask what information would change the answer.

Try it together

Consider a fictional hall whose IT equipment draws 100 kW continuously. Its total facility draw is 130 kW. Treat these as constant averages over 24 hours. Sketch the path from electricity to computer work and heat.

1. How much IT electricity is used each day?

2. What is the daily facility electricity and its PUE?

3. How must an orbital facility ultimately reject its waste heat?

A small activity at home

Draw the journey of a movie request. Add the wires, cooling system and people affected near the building. For space, add radiators, launch and debris questions.

Data Centers conversation notes

Answers to discuss

1. 100 kW × 24 h = 2,400 kWh.

2. 130 × 24 = 3,120 kWh. PUE is total facility energy divided by IT energy: 3,120/2,400 = 1.30.

3. It must move heat to surfaces that radiate it into space. Vacuum provides no ambient air for convective cooling.

Listen for this distinction

PUE is not a water-use or carbon-emissions score, and cold surroundings do not remove a spacecraft's thermal-design problem.

Useful follow-up

If both energy totals double, PUE stays 1.30. Explain why the ratio alone cannot tell a town the project's total electricity demand.

When the explanation is unclear

Ask “Which part are we sure about?” and “Can you show me with a smaller example?” Say when you do not know. Read the relevant chapter together and check its sources if the question goes beyond the example.

Signs of understanding

The learner can explain the idea in their own words, use a diagram or example, and say one thing the example does not prove. Repeating the book word for word is not the goal.

Keep the conversation comfortable

Use fictional people and amounts. Do not require personal disclosures. Short sessions are enough; stop before frustration turns reading into a test.

Reading route

Electricity for an hour; The whole-building energy ratio; 38 Why not put the cloud above the clouds?

Companion to Data Centers: NOW It Makes Sense by Sonny Saggar. First edition. This guide uses original supplementary teaching examples.