README: Solar Panel Charging Battery in Cisco Packet Tracer

Aim

To design and set up a simple battery system in Cisco Packet Tracer that charges a battery using energy from a solar panel, and verify its operation through the Power Meter and Battery monitoring tools.

Problem Statement

In real-world scenarios, renewable energy sources like solar power are increasingly used for charging batteries to store energy. In this project, we aim to simulate a solar-powered battery charging system in Cisco Packet Tracer to understand how energy is generated, monitored, and stored virtually.

Scope of the Solution

The solution demonstrates the feasibility of designing renewable energy systems in a simulated environment. It helps students and learners understand energy flow from solar panels to batteries, visualize charging behavior, and build foundational knowledge for IoT-enabled renewable energy systems.

Required Components

Software / IDE: Cisco Packet Tracer 8.x
Hardware (Simulated in Packet Tracer):
- Solar Panel
- Power Meter
- Battery

These devices are available under End Devices → Power Grid in Packet Tracer.

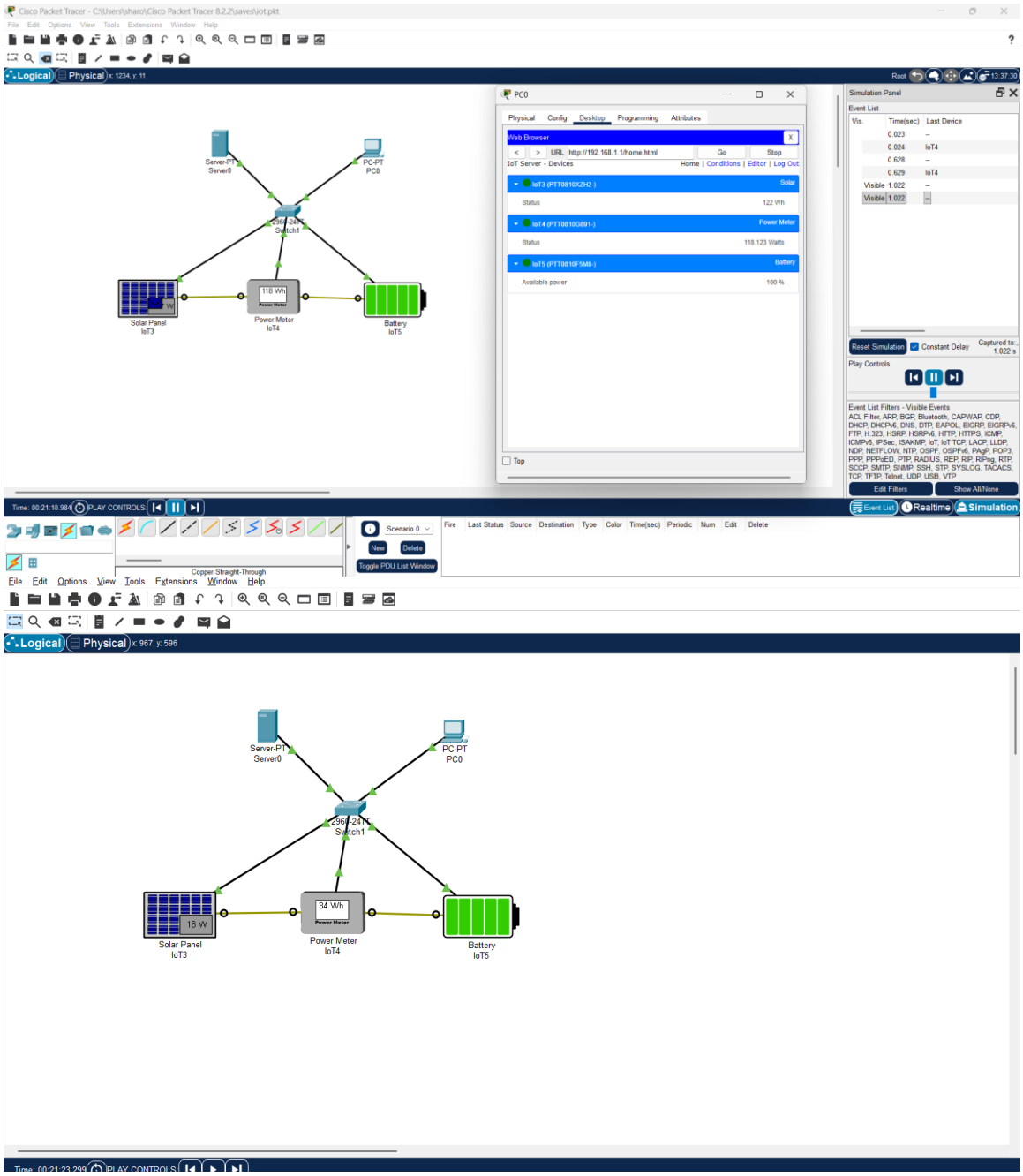
Simulated Circuit

The simulated circuit is created in Cisco Packet Tracer. The connections are made as follows:
- Solar Panel D0 → Power Meter D0
- Battery D0 → Power Meter D1

The Environment settings (Sunlight) are adjusted to simulate solar charging.

Demo

A video or screen capture of the Packet Tracer demo can be recorded to showcase:
- Sunlight being increased in Environment settings
- Power Meter showing power generation
- Battery GUI showing charge percentage increasing



Results

When the sunlight value is increased in the Environment settings, the Solar Panel begins to generate power. The Power Meter displays the generated watts, and the Battery GUI shows charging progress. The system successfully simulates solar-based battery charging.

Conclusion

A solar charging system was successfully simulated in Cisco Packet Tracer. The setup demonstrates the flow of renewable energy into a battery, fulfilling the project objective.