

Training Day 3 Report:

Date: *27 June, 2025 (Friday)*

Location: *PG Block HPC Lab*

Guided by: *Training Instructors (Classroom-Based)*

Main Objective:

To understand the principles and practical applications of cloud computing for IoT, distributed and client-server models, using Wi-Fi modules for sensor-cloud communication, and developing skills in ThingSpeak and related platforms.

Summary of the Day's Work

Today's session focused on learning about cloud and distributed computing, virtualization, service/deployment models, and practical sensor-to-cloud integration using ESP8266 and ThingSpeak.

Topics/Areas Covered:

- Cloud Computing for IoT
- Traditional vs Distributed Computing
- Goals of Distributed Systems
- Client-Server Architecture
- Cluster Computing, Grid Computing & Utility Computing
- Cloud Computing Basics & Benefits
- Virtualization & Types of Virtualization
- Cloud Framework, Service Models (IaaS, PaaS, SaaS)
- Deployment Models (Public, Private, Hybrid, Community)
- Introduction to ThingSpeak & MATLAB

- Connecting ESP8266 (Wi-Fi Module) to Read DHT11 Sensor Data
- Sending Data to ThingSpeak Cloud via HTTP

Concepts Learned:

- Cloud computing stores and processes IoT data remotely.
- Distributed computing enhances performance across devices.
- ESP8266 connects sensors with the internet for data upload.
- DHT11 sensor provides temperature and humidity data; ThingSpeak visualizes it.
- Practical experience in hardware-to-cloud connection using HTTP requests.
- Virtualization enables multiple OS on a single system.

Tools / Platforms Used

- ThingSpeak Cloud Platform
- ESP8266 Wi-Fi Module
- DHT11 Sensor
- MATLAB (linked with ThingSpeak)

Tasks Assigned

- Write detailed differences between:
 - Google App Engine
 - Microsoft Azure
 - Amazon EC2
- Complete Wi-Fi based Temperature & Humidity Project
- Submit project report after holidays

Observations / Reflections

The cloud and IoT connection part was very new for me, but interesting. I understood how data from sensors can be stored and monitored online. Looking forward to completing the Wi-Fi-based mini project during the break.

Key Takeaways

- Gained practical knowledge of IoT-cloud data transfer using ThingSpeak.
- Developed understanding of distributed and cloud models in IoT applications.
- Learned the process of connecting sensors to the web and visualizing real-time data using cloud platforms.