



# **SNS COLLEGE OF ENGINEERING**



**Kurumbapalayam(Po), Coimbatore – 641 107**

**Accredited by NAAC-UGC with 'A' Grade**

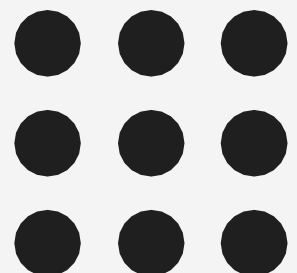
**Approved by AICTE, Recognized by UGC & Affiliated to Anna University, Chennai**

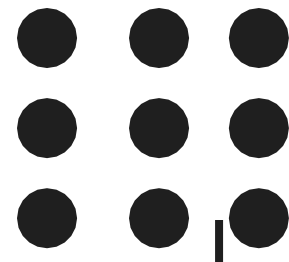
## **Department of Information Technology**

**Course Name – Internet of Things & AI**

**III Year / V Semester**

**CONNECTIVITY TECHNOLOGIES AND  
COMMUNICATION PROTOCOLS**



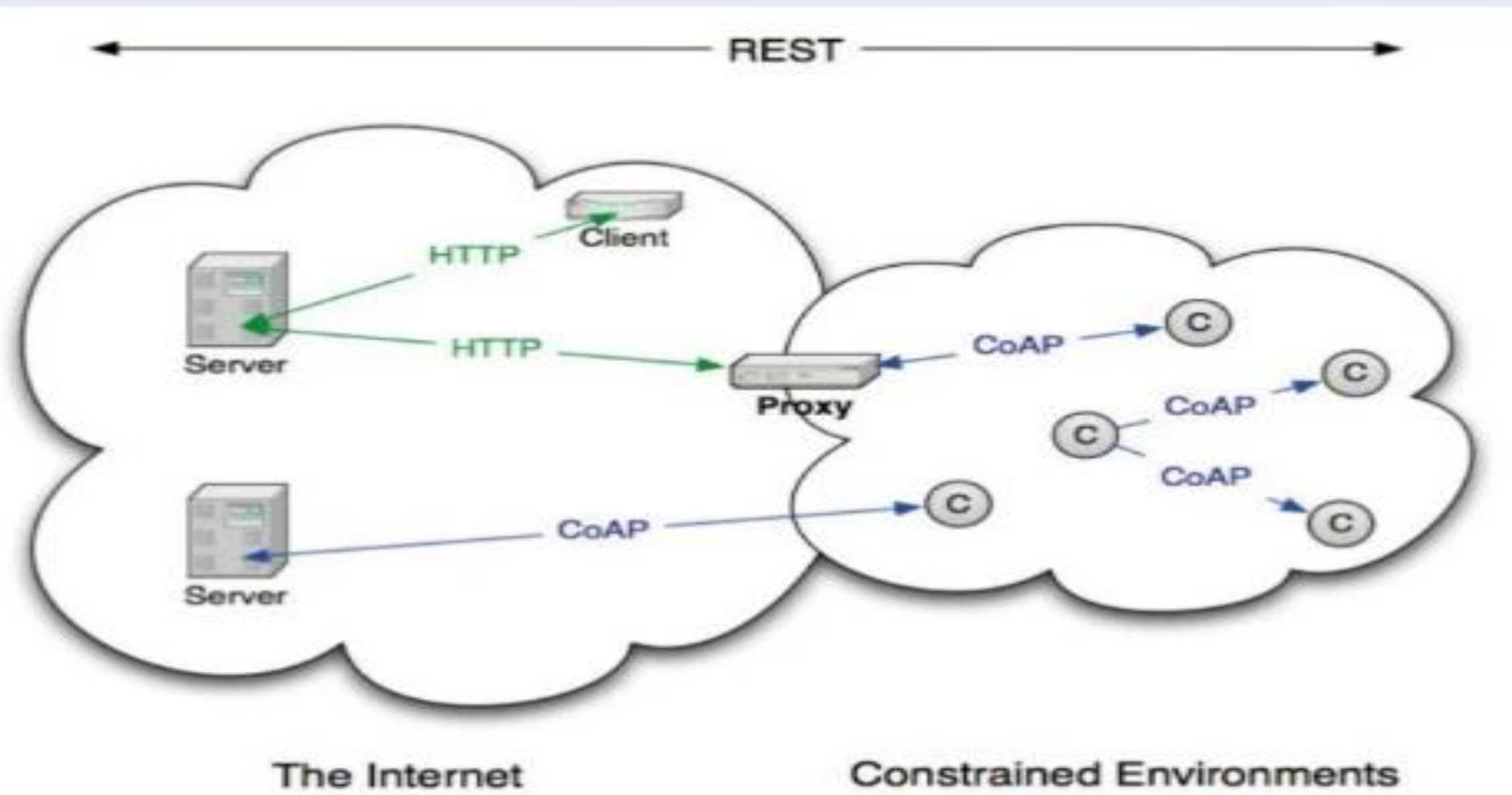


## What is CoAP

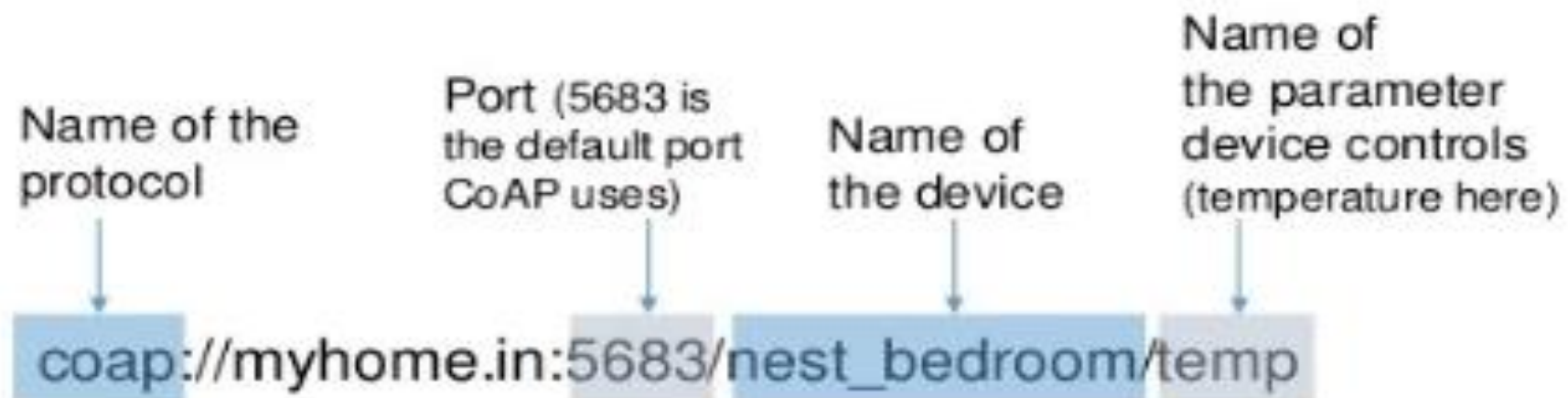
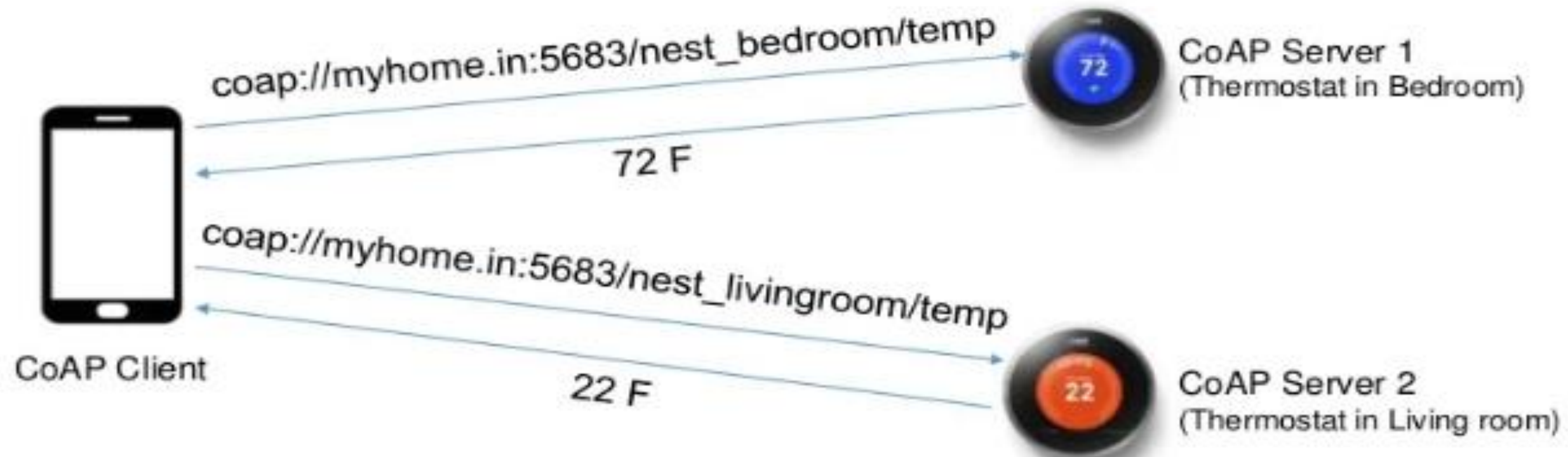
“The Constrained Application Protocol (CoAP) is a specialized **web transfer protocol** for use with **constrained** nodes and constrained networks in the **Internet of Things**.”

The protocol is designed for machine-to-machine (M2M) and IoT applications such as smart energy and building automation.”

# The CoAP Architecture



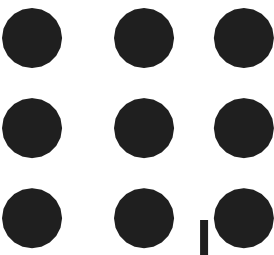
# CoAP – Request Response





# CoAP Methods

- GET
- POST
- PUT
- DELETE
- OBSERVE (Not present in Http, New in CoAP)



# CoAP Message Types



## CON / Confirmable message

A confirmable message requires a response, either a positive acknowledgement or a negative acknowledgement. In case acknowledgement is not received, retransmissions are made until all attempts are exhausted.

## NON / Non-confirmable message

A non-confirmable request is used for unreliable transmission (like a request for a sensor measurement made in periodic basis. Even if one value is missed, there is not too much impact). Such a message is not generally acknowledged.

## ACK / Acknowledgement

Sent to acknowledge a confirmable (CON) message.

## RST / Reset

This represents a negative acknowledgement and means "Reset". It generally indicates, some kind of failure (like unable to parse received data)

# XMPP



Extensible Messaging and Presence Protocol



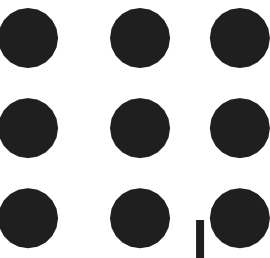
- XMPP is a short form for Extensible Messaging Presence Protocol.
- It's protocol for streaming XML elements over a network in order to exchange messages and presence information in close to real time.
- This protocol is mostly used by instant messaging applications like WhatsApp.
- XMPP is based on client-server architecture, i.e. clients don't communicate directly, they do it with the help of server as intermediary.
- It is decentralised means there is no centralised XMPP server just like email, anyone can run their own XMPP server.





Let's dive into each character of word **XMPP**:

- **X** : It means eXtensible. XMPP is a open source project which can be changed or extended according to the need.
- **M** : XMPP is designed for sending messages in real time. It has very efficient push mechanism compared to other protocols.
- **P** : It determines whether you are online/offline/busy. It indicates the state.
- **P** : XMPP is a protocol, that is, a set of standards that allow systems to communicate with each other.





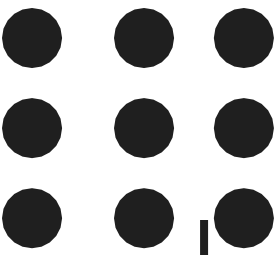
Each XMPP client is identified by JID (Jabber ID).

```
#JID
{
  user,
  server,
  resource
}
```

For example, I'm a whatsapp user and I'm identified by my mobile number, so

```
user = "8767898790"
server = "whatsapp.com"
resource = "mobile"

JID : "8767898790@whatsapp.com/mobile"
```



# CoAP Message Types



## CON / Confirmable message

A confirmable message requires a response, either a positive acknowledgement or a negative acknowledgement. In case acknowledgement is not received, retransmissions are made until all attempts are exhausted.

## NON / Non-confirmable message

A non-confirmable request is used for unreliable transmission (like a request for a sensor measurement made in periodic basis. Even if one value is missed, there is not too much impact). Such a message is not generally acknowledged.

## ACK / Acknowledgement

Sent to acknowledge a confirmable (CON) message.

## RST / Reset

This represents a negative acknowledgement and means "Reset". It generally indicates, some kind of failure (like unable to parse received data)