



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

An Autonomous Institution

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Chennai



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECT213- IoT SYSTEM ARCHITECTURE

II ECE / IV SEMESTER

UNIT 5 – IOT APPLICATIONS

**TOPIC 5 – Examples and case studies; Open issues and
challenges**



CHALLENGES IN DATA COMMUNICATION (NETWORKING) IN IORT



Challenges in Data Communication in IORT	Characteristics
Intercommunication	<ul style="list-style-type: none">(a) Necessity of standardization(b) IPv6 addressing must be used to lead the way(c) The current Internet should be easily integrated(d) Components designed with predetermined parameters(e) Cross-layer intercommunication required
Inpregnability	<ul style="list-style-type: none">(a) Confidentiality of data(b) Management of identity of privacy(c) Access control(d) Substantiation(e) Trusted platforms(f) Encryption
Extensibility	To enable a higher number of smart objects, an extensible management protocol is being developed



CHALLENGES IN DATA COMMUNICATION (NETWORKING) IN IoRT



Extensibility	To enable a higher number of smart objects, an extensible management protocol is being developed
Identification	Developing a name and identity management system that works
Movability	(a) Detection of movement required (b) Energy and processing restrictions should not exist in VANETs and MANETs
BigData	(a) The qualities of the data management service have a direct correlation with performance (b) The data integrity attribute should be considered
Management of Energy	(a) Green technologies are required for energy-efficient systems (b) Still not fulfilled completely



CHALLENGES IN DATA COMMUNICATION (NETWORKING) IN IIoT



- Considering the global IIoT market size, large device manufacturing, IIoT technology investment, academic interest in IIoT, and the possible return on investment of IIoT businesses, the future of IIoT technology seems extremely bright and promising. However, because of the immense scope of the IIoT infrastructure and the large number of devices involved, security issues will become much more prevalent.
- Security procurement is required to disarm malevolent actors that pose a danger to the IIoT, and it has yet to be satisfied effectively, as seen in the preceding section's protocol comparison. The security concerns posed by IIoT will serve as a crucial research topic



CHALLENGES IN DATA COMMUNICATION (NETWORKING) IN IoT



- The open networking problems in the IoT area are summarised in Table .. Aside from security provisioning, compatibility between network protocols is another major difficulty in IoT development. Leading firms throughout the world are designing smart devices with complete interoperability in mind. These features are critical because they will allow for seamless interaction with the present Internet .
- The expense of an IoT protocol with numerous sophisticated capabilities rises as the convenience of use decreases. Building an attractive protocol is not an easy undertaking, and it is usually a trade-off between system cost and performance.
- IPv6 introduces beneficial and adaptable networking technologies, bringing IoT features one step closer to desired interoperability. The Internet of Things will connect a variety of things to create revolutionary services.



CHALLENGES IN DATA COMMUNICATION (NETWORKING) IN IoT



- Moreover, IoT data is characterized by heterogeneity, which implies that information is created in large quantities, arrives in real-time, has a changing structure, and may have an unknown source. Because total performance is in a straight line proportional to the characteristics of the data managing service, the problem of managing massive data is crucial.
- Whenever the data integrity component is examined, the problem becomes much more problematic, not only because it impacts service quality, but also because it raises privacy and security concerns, especially with outsourced data.



CHALLENGES IN DATA COMMUNICATION (NETWORKING) IN IoRT



- Another important aspect of the IoRT paradigm is mobility management. Because of the hard processing and power limits, conventional mobility-supporting protocols for Vehicular Ad Hoc Networks (VANETs), sensor networks, Mobile Ad Hoc Networks (MANETs) and are unable to effectively cope with common IoRT devices.
- To keep track of the device's location and response to topological changes, movement tracking is required.



CHALLENGES IN DATA COMMUNICATION (NETWORKING) IN IoT



- Furthermore, the energy needs of IoT are yet unmet.
- A few routing protocols, as previously mentioned, offer low-power data exchange, however, they are still in the early stages of development. As a result, green technologies must be used to make IoT devices as power-efficient as feasible.