



# IoT Edge Computing Challenges and Functions

<https://tools.ietf.org/html/draft-hong-t2trg-iot-edge-computing-03>

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# History of the Draft

- draft-hong-iot-edge-computing-01 (IETF 103)
  - Draft was presented along with two demo videos of use cases for IoT Edge computing (smart construction and real-time control system)
- draft-hong-iot-edge-computing-02 (IETF 104)
  - In a discussion on Edge and IoT in the T2TRG meeting, this draft was considered a possible starting point for a group document. New co-authors joined.
- draft-hong-t2trg-iot-edge-computing-00 (IETF 105)
  - Draft was integrated with *Survey and gap analysis*, a presentation made in T2TRG at IETF 100
- draft-hong-t2trg-iot-edge-computing-01 (IETF 106)
  - Focus changed from use case examples to Edge function analysis.
  - Draft changed from showing one Edge architecture to a range of models. Did not promote/preclude a particular model.
- draft-hong-t2trg-iot-edge-computing-02/3 (IETF 107)
  - Reorganized the draft
  - Extended the background section and the list of functions

# Updates 1/2

draft-hong-t2trg-iot-edge-computing-02

## 1. Introduction

2. Conventions and Terminology

3. Background

3.1. Internet of Things (IoT)

3.2. Cloud Computing

## 3.3. Edge Computing

3.4. Example of IoT Edge Computing Use Cases

3.5. Common Aspects of Current IoT Edge Computing Service Platforms

4. Challenges for IoT and Impacts of Edge Computing

(...)

## Edited the draft for clarifications

- This impacted most sections, including abstract, introduction

## Re-organized the draft

- The main sections are now: 3. background, 4. challenges for IoT, 5. EC functions

## Extended section 3.3. Edge Computing

- to cover different understandings of “Edge”,
  - which depend on backgrounds (cloud, telco, industrial automation).
  - Also expanded on the term “Fog”

# Updates 2/2

(...)

## 5. IoT Edge Computing Functions

5.1. OAM Components (Resources Discovery, Virtualization Management, Authentication and Authorization, Edge Organization and Federation)

5.2. Functional Components (External APIs, Communication Brokering, In-Network Computation , Edge Caching, Other Services)

5.3. Application Components (IoT End Devices Management, Data Management)

5.4. Simulation and Emulation Environments

## 6. Security Considerations

(...)

## Appendix A. Overview of the IoT Edge Computing

A.1 Open Source Projects

A.2 Products

A.3 Research Projects

## Extended section 5

- to detail the list of functions, including detailed challenges
- Functions can be present in some or all models (centralized or decentralized)
- Functions are loosely classified as OAM, functional and application components

*For reviewers: section 4 describes challenges on IoT leading to the adoption of edge computing. Section 5 covers challenges associated with EC functions*

- We need to improve on describing the relation between sections 4 and 5

## draft-hong-t2trg-iot-edge-computing-03

- Some updates based on Rute's review: several clarifications, including that end devices can be computing nodes, and we expanded on the mobility support challenge

# Plans for the Draft

- We believe the draft is in stable state in term of content and structure
- Still some areas we plan to improve and would like to highlight for reviewers:
  - Relationship between sections 4 and 5
  - Models in section 5 can be extended (e.g. MEC, distributed models)
  - Individual functions descriptions in section 5 can be developed further, especially with detailed challenges
  - Security related contributions and comments are welcome as well
- The draft is now available for the RG to review and consider for RG adoption