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TECHNICAL REPORT

colour inside

Internet of things (IoT) – Edge computing



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INTERNET OF THINGS (IoT) – EDGE COMPUTING

FOREWORD

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ISO/IEC TR 30164, which is a Technical Report, has been prepared by subcommittee 41: Internet of Things and related technologies, of ISO/IEC joint technical committee 1: Information technology.

The text of this Technical Report is based on the following documents:

Enquiry draft	Report on voting
JTC1-SC41/110/DTR	JTC1-SC41/120/RVDTR

Full information on the voting for the approval of this Technical Report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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INTERNET OF THINGS (IoT) – EDGE COMPUTING

1 Scope

This document describes the common concepts, terminologies, characteristics, use cases and technologies (including data management, coordination, processing, network functionality, heterogeneous computing, security, hardware/software optimization) of edge computing for IoT systems applications. This document is also meant to assist in the identification of potential areas for standardization in edge computing for IoT.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 20924, *Internet of Things (IoT) – Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 20924 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
edge
boundary between pertinent digital and physical entities, delineated by networked sensors and actuators

3.2
edge computing
distributed computing that takes place at or near the edge, where the nearness is defined by the system's requirements

3.3
software defined network
SDN
network designed, built and managed with separation of the control plane from the forwarding plane and abstraction of the underlying infrastructure, enabling efficient network management and utilization

3.4
personally identifiable information
PII
information that (a) can be used to establish a link between the information and the natural person to whom such information relates, or (b) is or can be directly or indirectly linked to a natural person

[SOURCE: ISO/IEC 29100:2011 [1], 2.9, modified – In the definition, "to identify the PII principal" has been replaced by "to establish a link between the information and the natural person" and "a PII principal" has been replaced by "a natural person".]

3.5
edge computing entity
ECE
thing (physical or non-physical) having a distinct existence in an edge computing system, with connection, storage and computation capabilities

Note 1 to entry: ISO/IEC TR 23188:2020 [2] uses the term "edge computing node" instead of "edge computing entity".

3.6
distributed computing
model of computing in which processing and storage takes place on a set of entities, with activities coordinated by means of digital messages passed between the entities

3.7
physical edge computing entity
edge computing entity that has material existence in the physical world

EXAMPLES: IoT gateway, sensor, actuator

Note 1 to entry: Refer to ISO/IEC 20924 [3] for the definitions of the terms "sensor", "actuator" and "IoT gateway".

3.8
IoT gateway
edge computing entity that connects one or more proximity networks and the edge devices on those networks to each other and to one or more access networks

3.9
edge computing system
system that uses the structure and capabilities of edge computing

4 Abbreviated terms

4G	the fourth generation of broadband cellular network technology
5G	the fifth generation of broadband cellular network technology
AI	artificial intelligence
AMQP	advanced message queuing protocol
API	application programming interface
APP	applications
CAN	controller area network
CPS	cyber physical system
CPU	central processing unit
CT	communication technology
DDoS	distributed denial-of-service
DDS	data distribution service
DER	distributed energy resource
DetNet	deterministic networking
ECE	edge computing entity
ERP	enterprise resource planning
GEO	geosynchronous orbit