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Information technology — Cloud computing — Edge computing landscape

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 38, *Cloud computing and distributed platforms*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Edge computing is increasingly used in systems that deal with aspects of the physical world. Edge computing involves the placement of processing and storage near or at the places where those systems interact with the physical world, which is where the "edge" exists. One of the trends in this space is the development of increasingly capable Internet of Things (IoT) devices (sensors and actuators), which generate more data or new types of data. There is significant benefit from moving the processing and storing of this data close to the place where the data is generated.

Cloud computing is commonly used in systems that are based on edge computing approaches. This can include the connection of both devices and edge computing nodes to centralized cloud services. However, it is the case that the locations in which cloud computing is performed are increasingly distributed in nature. The cloud services are being implemented in locations that are nearer to the edge in order to support use cases that demand reduced latency or avoiding the need to transmit large volumes of data over networks with limited bandwidth.

This document aims to describe edge computing and the significant elements which contribute to the successful implementation of edge computing systems, with an emphasis on the use of cloud computing and cloud computing technologies in the context of edge computing, including the virtualization of compute, storage and networking resources.

It is useful to read this document in conjunction with ISO/IEC TR 30164[1)] [27], which takes a view of edge computing from the point of view of IoT systems and the IoT devices which interact with the physical world.

1) Under development. Current stage 10.99.

Information technology — Cloud computing — Edge computing landscape

1 Scope

This document examines the concept of edge computing, its relationship to cloud computing and IoT, and the technologies that are key to the implementation of edge computing. This document explores the following topics with respect to edge computing:

— concept of edge computing systems;

— architectural foundation of edge computing;

— edge computing terminology;

— software classifications in edge computing, e.g. firmware, services, applications;

— supporting technologies, e.g. containers, serverless computing, microservices;

— networking for edge systems, including virtual networks;

— data, e.g. data flow, data storage, data processing;

— management, of software, of data and of networks, resources, quality of service;

— virtual placement of software and data, and metadata;

— security and privacy;

— real time;

— mobile edge computing, mobile devices.

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 22123-1:—[2)], *Information technology — Cloud computing — Part 1: Terminology*

ISO/IEC TS 23167, *Information technology — Cloud computing — Common technologies and techniques*

2) To be published.