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**Information ~~Technology~~ — Data ~~Centres~~ — Best practices for resource
efficient data centres**

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**INFORMATION TECHNOLOGY –
DATA CENTRES –
BEST PRACTICES FOR RESOURCE EFFICIENT DATA CENTRES**

FOREWORD

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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 ~~ISO documents~~ 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). ~~2~~ (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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~~The committee responsible for this~~ This document ~~is~~ was prepared by Joint Technical Committee ISO/IEC JTC-1, Information technology, ~~Subcommittee SC-39, Sustainability for IT and by Information Technology data centres.~~

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

INTRODUCTION

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 and www.iec.ch/national-committees.

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Introduction

Data centres are essential to the provision of ~~IT~~information technology (IT) services and can play an important role in the conservation of resources, ~~but, However, they~~ can also consume a considerable amount of resources if mis-managed and thus, it is critical to utilize ~~those~~these resources efficiently.

Resource efficiency in the data centre begins with the location (taking advantage of the external environment) and the building design to minimize energy consumption. ~~The~~ facilities can then implement modular extension or easily extensible space, cooling, and power according to the IT services provided and co-location situation.

Once data centres are constructed and equipped with all the necessary facilities, it is important to collect and monitor operational data. Based on the information obtained, it is possible to determine which elements utilize ~~resource~~resources least efficiently and assess how to improve that performance.

The performance of existing facilities can be periodically measured to determine if the original design objectives for resource efficiency are being achieved and allowing performance to be improved by replacement of equipment with better resource-~~efficiency~~ characteristics.

This ~~Technical Report~~document provides ~~guidance~~information on available options for ~~improvement of~~improving resource efficiency in data ~~centers and~~centres, with particular emphasis on operational procedures.

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Information technology – Data centres – Best practices for resource-efficient data centres

1 Scope

This ~~Technical Report provides~~ document describes generally applicable ~~guidelines to improve~~ best practices for improving the resource efficiency of data centres, independent of their application.

This ~~Technical Report document~~ focuses on continuous improvement processes, ~~design~~ designs and guidelines that prioritize resource efficiency. In general, the processes and ~~guidelines~~ best practices are technology-neutral and ~~are~~ independent of location.

The ~~guidelines~~ best practices for data ~~center~~ centre resource efficiency improvement deal with various establishment and operation aspects such as data centre planning, management, cooling, power feeding, information and communications technology (ICT) and cost aspects that are not restricted by the scope of this ~~Technical Report document~~.

The following items are ~~out of~~ not included in the scope of this document:

- ~~—~~ — development of key performance indicators (KPIs);
- ~~—~~ — comparability between data centre performance results;
- ~~—~~ — definition of maturity models for data centre ~~and~~;
- ~~—~~ — social sustainability issues.

2 Normative references

~~The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.~~

There are no normative references in this document.

3 Terms, definitions and abbreviations

~~3.1 Terms and definitions~~

For the purposes of this document, the following terms and definitions apply.

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

- ~~—~~ — ISO Online browsing platform: available at <https://www.iso.org/obp>
- ~~—~~ — IEC Electropedia: available at <https://www.electropedia.org/>

~~3.1.1~~

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availability

ability of an item to be in a state to perform a required function under given conditions at a given instant of time or over a given time interval, assuming that the required external resources are provided

[SOURCE: ISO/IEC 22237-1:2021, 3.1.1]

3.1.2

computer room space

area within the data centre that accommodates the data processing, data storage and telecommunication equipment that provides the primary function of the data centre

[SOURCE: ISO/IEC 22237-1:2021, 3.1.6]

3.1.3

computer room air conditioning/computer room air handling CRAC/CRAH

equipment that provides cooling airflow volumes into a computer room as a means of environmental control

Note 1 to entry:- Other abbreviations such as CCU, DFU, RACU, UFU are sometimes used.

3.1.4

data centre

structure, or group of structures, dedicated to the centralized accommodation, interconnection and operation of information technology and network telecommunications equipment providing data storage, processing and transport services together with all the facilities and infrastructures for power distribution and environmental control together with the necessary levels of resilience and security required to provide the desired service availability

Note 1 to entry: A structure can consist of multiple buildings and/or spaces with specific functions to support the primary function.

Note 2 to entry: The boundaries of the structure or space considered the data centre which includes the information and communication technology equipment and supporting environmental controls can be defined within a larger structure or building.

[SOURCE: ISO/IEC 30134-1:2016, 3.1.4]

3.1.5

direct liquid-cooled ICT equipment

ICT equipment that is cooled by a direct flow of liquid into an equipment cabinet or directly to the ICT equipment chassis to provide cooling, rather than the use of moving air

3.1.6

energy efficiency

measure of the work done (as a result of design and/or operational procedures) for a given amount of energy consumed

3.1.7

hot aisle/cold aisle- (system)

construction of cabinets and containment intended to prevent the mixing of ICT equipment intake and exhaust air within computer room space(s)