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Information technology - Data centre facilities and infrastructures - Part 1: General concepts

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren - Teil 1: Allgemeine Konzepte

Installation et infrastructures de centres de traitement de données - Partie 1: Concepts généraux

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Information technology - Data centre facilities and infrastructures - Part 1: General concepts

Installation et infrastructures de centres de traitement de données -
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CENELEC

European Committee for Electrotechnical Standardization
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Foreword

This document (EN 50600-1:2012) has been prepared by CLC/TC 215 "Electrotechnical aspects of telecommunication equipment".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2013-10-22
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2015-10-22

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Introduction

The unrestricted access to internet-based information demanded by the information society has led to an exponential growth of both internet traffic and the volume of stored/retrieved data. Data centres are housing and supporting the information technology and network telecommunications equipment for data processing, data storage and data transport. They are required both by network operators (delivering those services to customer premises) and by enterprises within those customer premises.

Data centres need to provide modular, scalable and flexible facilities and infrastructures to easily accommodate the rapidly changing requirements of the market. In addition, energy consumption of data centres has become critical both from an environmental point of view (reduction of carbon footprint) and with respect to economical considerations (cost of energy) for the data centre operator.

The implementation of data centres varies in terms of:

a) purpose (enterprise, co-location, co-hosting or network operator facilities);

b) security level;

c) physical size;

d) accommodation (mobile, temporary and permanent constructions).

The needs of data centres also vary in terms of availability of service, the provision of security and the objectives for energy efficiency. These needs and objectives influence the design of data centres in terms of building construction, power distribution, environmental control and physical security. Effective management and operational information is required to monitor achievement of the defined needs and objectives.

This series of European Standards specifies requirements and recommendations to support the various parties involved in the design, planning, procurement, integration, installation, operation and maintenance of facilities and infrastructures within data centres. These parties include:

1) owners, facility managers, ICT managers, project managers, main contractors;

2) consultants, architects, building designers and builders, system and installation designers;

3) suppliers of equipment;

4) installers, maintainers.

At the time of publication of this European Standard, EN 50600 series will comprise the following standards:

EN 50600-1: *Information technology - Data centre facilities and infrastructures - Part 1: General concepts*

EN 50600-2-1: *Information technology - Data centre facilities and infrastructures - Part 2-1: Building construction*

EN 50600-2-2: *Information technology - Data centre facilities and infrastructures - Part 2-2: Power distribution*

EN 50600-2-3: *Information technology - Data centre facilities and infrastructures - Part 2-3: Environmental control*

EN 50600-2-4: *Information technology - Data centre facilities and infrastructures - Part 2-4: Telecommunications cabling infrastructure*

EN 50600-2-5: *Information technology - Data centre facilities and infrastructures - Part 2-5: Security systems*

EN 50600-2-6: *Information technology - Data centre facilities and infrastructures - Part 2-6: Management and operational information*

The inter-relationship of the standards within the EN 50600 series is shown in Figure 1.

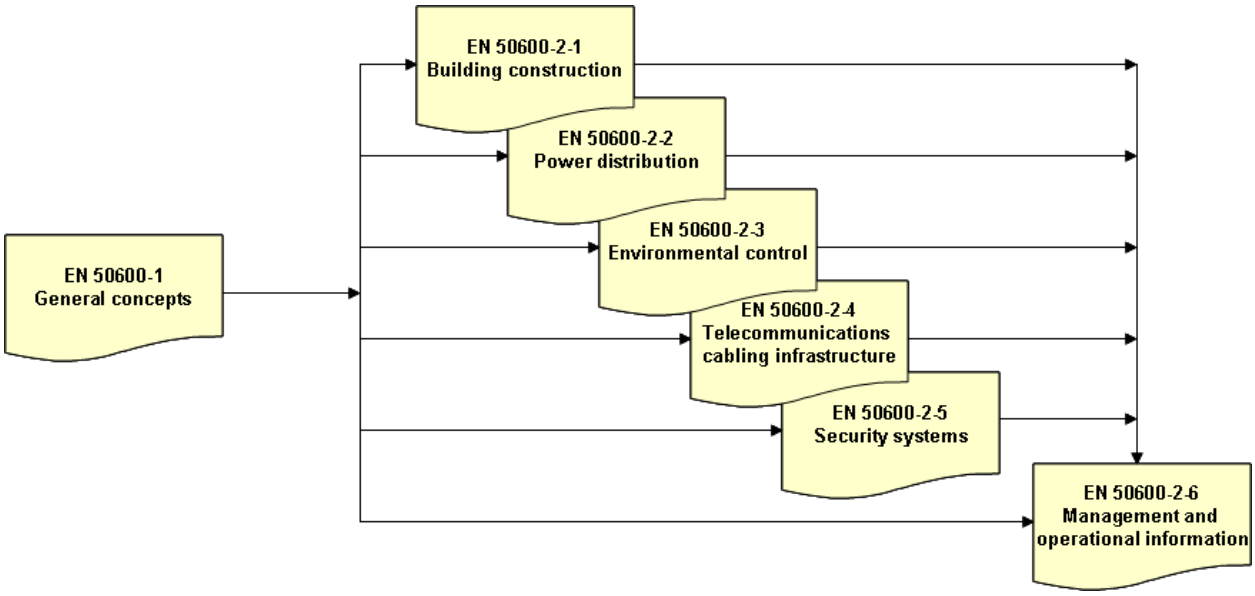

Figure 1 – Schematic relationship between EN 50600 series of standards

1 Scope and conformance

1.1 Scope

This European Standard:

a) details the issues to be addressed in a business risk and operating cost analysis enabling application of an appropriate classification of the data centre;

b) defines the common aspects of data centres including terminology, parameters and reference models (functional elements and their accommodation) addressing both the size and complexity of their intended purpose;

c) describes general aspects of the facilities and infrastructures required to support effective operation of telecommunications within data centres;

d) specifies a classification system, based upon the key criteria of “availability”, “security” and “energy-efficiency” over the planned lifetime of the data centre, for the provision of effective facilities and infrastructure;

e) describes the general design principles for data centres upon which the requirements of the EN 50600 series are based including symbols, labels, coding in drawings, quality assurance and education;

The following topics are outside of the scope of this series of European Standards:

1) the selection of information technology and network telecommunications equipment, software and associated configuration issues are outside the scope of this European Standard;

2) safety and electromagnetic compatibility (EMC) requirements (covered by other standards and regulations. However, information given in this European Standard may be of assistance in meeting these standards and regulations).

1.2 Conformance

For a data centre design to conform to this European Standard:

a) a business risk analysis according to Clause 4 shall be completed;

b) an appropriate Availability Class in 6.2 shall be selected using a business risk analysis in Clause 4;

c) an appropriate Protection Class in 6.3 shall be selected using a business risk analysis in Clause 4;

d) an appropriate energy efficiency enablement level in 6.4 shall be selected;

e) the general design principles in Annex A shall be applied.

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.

EN 50600-2-1 [1)], *Information technology — Data centre facilities and infrastructures – Part 2-1: Building construction*

EN 50600-2-2 [1)], *Information technology — Data centre facilities and infrastructures – Part 2-2: Power distribution*

EN 50600-2-3 [2)], *Information technology — Data centre facilities and infrastructures – Part 2-3: Environmental control*

EN 50600-2-4 [2)], *Information technology — Data centre facilities and infrastructures – Part 2-4: Telecommunications cabling infrastructure*

EN 50600-2-5 [2)], *Information technology — Data centre facilities and infrastructures – Part 2-5: Security systems*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

3.1.1
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: IEC 60050-191:1990, 191-02-05]

3.1.2
building entrance facility
facility that provides all necessary mechanical and electrical services for the entry of telecommunications cables into a building and which may allow for transition from external to internal cable

[SOURCE: EN 50173-1:2011, 3.1.17]

3.1.3
building security
facilities and systems necessary to provide the required levels of security at the entrance to and within the building containing the data centre

3.1.4
cabinet
enclosed construction for housing closures and other information technology equipment

[SOURCE: EN 50174-1:2009, 3.1.4]

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1) At enquiry stage.

2) Under consideration.

3.1.5
co-hosting data centre
data centre in which multiple customers are provided with access to network(s), servers and storage equipment on which they operate their own services/applications

Note 1 to entry: Both the information technology equipment and the support infrastructure of the building are provided as a service by the data centre operator.

[SOURCE: EN 50174-2:2009/A1:2011, 3.1.2]

3.1.6
co-location data centre
data centre in which multiple customers locate their own network(s), servers and storage equipment

Note 1 to entry: The support infrastructure of the building (such as power distribution and environmental control) is provided as a service by the data centre operator.

[SOURCE: EN 50174-2:2009/A1:2011, 3.1.3]

3.1.7
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

3.1.8
control room space
area within the data centre used to control the operation of the data centre and to act as a central point for all control and monitoring functions

3.1.9
data centre
a structure, or group of structures, dedicated to the centralised 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.

3.1.10
data centre security
necessary facilities and systems that provide the required levels of security at the entrance to and within the data centre

3.1.11
demarcation point
point where the operational control or ownership changes