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del: Pokabljenje za telekomunikacije

Information technology - Data centre facilities and infrastructures -- Part 2-4:
Telecommunications Cabling Infrastructure

Informationstechnik - Einrichtungen und Infrastrukturen von Rechenzentren -- Teil 2-4:
Infrastruktur der Telekommunikationsverkabelung

Technologie de l'information - Installation et infrastructures de centres de traitement de
données -- Partie 2-4: Infrastructure du câblage dédié télécommunications

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**Information technology -
Data centre facilities and infrastructures -
Part 2-4: Telecommunications Cabling Infrastructure**

Technologie de l'information -
Installation et infrastructures de centres de
traitement de données -
Partie 2-4: Infrastructure du câblage dédié
télécommunications

Informationstechnik -
Einrichtungen und Infrastrukturen von
Rechenzentren -
Teil 2-4: Infrastruktur der
Telekommunikationsverkabelung

This draft European Standard is submitted to CENELEC members for CENELEC enquiry.
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It has been drawn up by CLC/TC 215.

If this draft becomes a European Standard, CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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CENELEC

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Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

This document (prEN 50600-2-4:2013) has been prepared by CLC/TC 215 "Electrotechnical aspects of telecommunication equipment".

This document is currently submitted to the Enquiry.

EN 50600-2-4 is part of the EN 50600 series of European Standards, which will comprise the following parts:

Part 1: General concepts

Part 2-1: Building construction

Part 2-2: Power distribution

Part 2-3: Environmental control

Part 2-4: Telecommunications Cabling Infrastructure

Part 2-5: Security systems

Part 2-6: Management and operational information

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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) architects, building designers and builders, system and installation designers;
- 3) facility and infrastructure integrators, 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.

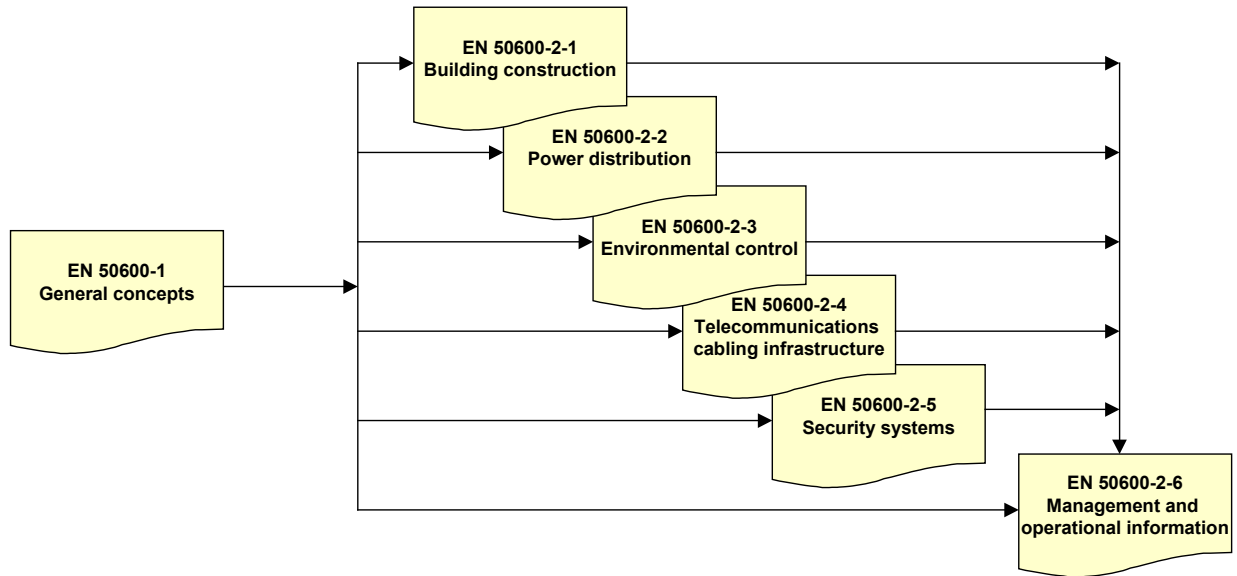


Figure 1 - Schematic relationship between the EN 50600 standards

EN 50600-2-X standards specify requirements and recommendations for particular facilities and infrastructures to support the relevant classification for “availability”, “security” and “energy efficiency enablement” selected from EN 50600-1.

This European Standard addresses the specific requirements for the telecommunications cabling infrastructure in data centres used for the purpose of IT networking and building services (in accordance with the requirements of EN 50600-1).

This European Standard is intended for use by and collaboration between architects, building designers and builders, system and installation designers.

NOTE The “intended for” text above needs to be reviewed and definitions need to be created for each of the “responsible persons”.

This series of European Standards does not address the selection of information technology and network telecommunications equipment, software and associated configuration issues.

1 Scope and conformance

1.1 Scope

This European Standard addresses the wide range of telecommunications cabling infrastructures within data centres based upon the criteria and classifications for “availability” within EN 50600-1.

This European Standard specifies requirements and recommendations for the following:

- a) information technology and network telecommunications cabling (e.g. SAN and LAN);
- b) general information technology cabling to support the operation of the data centre,
- c) telecommunications cabling to monitor and control, as appropriate, power distribution, environmental control and physical security of the data centre;
- d) other building automation cabling;
- e) pathways, spaces and enclosures for the telecommunications cabling infrastructures.

Safety and electromagnetic compatibility (EMC) requirements are outside the scope of this European Standard and are 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 to conform to this European Standard:

- a) the cabling design meets the requirements of clause 4 of this standard;
- b) cabling design for the selected availability class shall be in accordance with clause 6 of this standard;
- c) pathways and spaces design shall be in accordance with Clauses 7 and 8;
- d) installation planning shall be in accordance with clause 7 and 8 of this standard;
- e) information technology cabling to support the operation of the data centre shall be in accordance with EN 50173-2;
- f) information technology cabling to support the IT networking function of the data centre shall be in accordance with EN 50173-5;
- g) telecommunications cabling for monitoring/control of power distribution, environmental control and physical security shall be in accordance with EN 50173-6;
- h) installation specification, quality assurance, installation planning and practice of cabling shall be in accordance with EN 50174 series;
- i) national and local regulations, including safety, shall be met.

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 50173-1, *Information technology - Generic cabling systems - Part 1: General requirements*

EN 50173-2, *Information technology - Generic cabling systems - Part 2: Office Premises*

EN 50173-5, *Information technology - Generic cabling systems - Part 5: Data Centres*

EN 50173-6, *Information technology - Generic cabling systems – Part 6: Distributed building services*

EN 50174-1, *Information technology - Cabling installation - Part 1: Installation specification and quality assurance*

EN 50174-2, *Information technology - Cabling installation - Part 2 Installation planning and practices inside buildings*

EN 50600-1:2012, *Information technology - Data centre facilities and infrastructures - Part 1: General concepts*

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

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

EN 50600-2-6 ³⁾, *Information technology - Data centre facilities and infrastructures - Part 2-6: Management and operational information*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 50600-1 and the following apply.

3.1.1

central patching location

passive cross-connect to connect different functional elements of a data centre

Note 1 to entry: A central patching location can be located in the main distribution area and/or the intermediate distribution area and is therefore a special configuration of an MD and/or an ID.

3.1.2

cross-connect

method of connecting a cabling subsystem to equipment (or another cabling subsystem) by the use of a patch cord or jumper

3.1.3

data centre information technology equipment

equipment in the computer room space of a data centre that transports and/or stores and/or processes information

3.1.4

fixed cabling

cabling subsystem between closures which may have a either peer-to-peer or hierarchical structure which enable the installation of cross-connects or interconnects

3.1.5

office networks information technology equipment

equipment in data centre spaces that transports and/or stores and/or processes information

1) Circulated for Formal Vote.

2) Circulated for CENELEC Enquiry.

3) At draft stage.

3.1.6

point-to-point connection

direct connection of two pieces of IT equipment using a dedicated cable rather than a generic cabling system

3.1.7

zone patching location

passive crossconnect to connect different function elements of a data centre zone. A zone patching location can be located in the zone distribution area and is therefore a special configuration of a ZD.

3.2 Abbreviations

For the purposes of this document, the abbreviations given in EN 50600-1 and the following abbreviations apply.

BEF Building Entrance Facility

BD Building Distributor

C Connection

CD Campus Distributor

CP Consolidation Point

CPL Central Patching Location

ENI External Network Interface

EO Equipment Outlet

EQP Transmission Equipment

FD Floor Distributor

ID Intermediate Distributor

LDP Local Distribution Point

MD Main Distributor

SCP Service Concentration Point

SD Service Distributor

SO Service Outlet

TE Terminal Equipment

TO Telecommunications Outlet

ZD Zone Distributor

ZPL Zone Patching Location

4 Telecommunications cabling within the data centre

4.1 General

4.1.1 The importance of telecommunications cabling within data centre spaces

The telecommunications cabling within the data centre serves the purposes of data centre information technology and network telecommunications, monitoring and controlling of other data centre infrastructures and building services and automation. The design and planning of cabling infrastructures should be undertaken at an early stage of the data centre design or refurbishment and should be integrated with the design and planning of electrical power, environmental control systems and other utilities and services such as security and lighting systems. This clause describes the performance design criteria and architectures for the different cabling types in a data centre.

The importance of the information technology and network telecommunications cabling infrastructure is similar to that of other infrastructures such as environmental control, power distribution and security. As with other utilities, interruptions to service can have a serious impact. Poor quality of service due to lack of planning, use of inappropriate components, incorrect installation, poor administration or inadequate support can threaten an organisation's effectiveness.

4.1.2 Cabling implementation

The cabling infrastructures in a data centre shall be appropriate to provide networking and telecommunications capabilities in and between many of the dedicated data centres spaces.

For the purposes of this standard, two types of cabling are considered in all data centre spaces:

- a) direct point-to-point;
- b) fixed cabling between closures which may have a either peer-to-peer or hierarchical structure. The closures may be grouped and accommodated in cabinets, frames or racks which act as cabling presentation facilities. The cabling presentation facilities allow interconnection or cross-connections between fixed cabling or between fixed cabling and IT equipment in close proximity.

NOTE: The general definition fully supports all the generic cabling implementations and also any other solutions.

4.1.3 Direct point to point cabling

4.1.3.1 General

The point-to-point connection method uses discrete cords (typically factory-produced) that directly connect the active equipment. Each cord connects a single port of one device to a single port of another device.

Although direct point-to-point cabling seems to be the simplest and most cost effective method of providing connections, for several reasons this cabling type should only be used for connections within the same or two adjacent cabinets, frames or racks. Point-to-point cabling is often not reusable as the data centre evolves and equipment types and locations change and may have a limited life time expectation. Continuous changes to the required interconnections increase both the planning and the operational resources required for each change (see Figure 2 and Figure 3) and increases the risk of interfering with other infrastructures - including those for environmental control.

4.1.3.2 Restrictions on the use of direct point-to-point cabling

Point to point cabling may be used subject to the following restrictions:

- a) it shall be ensured that the mechanical performance of cords or cables used for direct point-to-point connections meet the requirements of the installation environment (e.g. pathway systems);
- b) connectors on cords shall be protected against damage during installation, disconnection or removal;
- c) point-to-point connections shall only be used where the replacement of the cord following damage to either connector can be performed without disruption to the data centre operation;