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

Technologie de l'information - Installation et infrastructures
de centres de traitement de données - Partie 2-6:
Informations de gestion et de fonctionnement

Informationstechnik - Einrichtungen und Infrastrukturen von
Rechenzentren - Teil 2-6: Informationen für das
Management und den Betrieb

This draft European Standard is submitted to CENELEC members for 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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56 **Foreword**

57 This document (prEN 50600-2-6:2014) has been prepared by CLC/TC 215 "Electrotechnical aspects of
58 telecommunication equipment".

59 This document is currently submitted to the Enquiry.

60 This document has been prepared under a mandate given to CENELEC by the European Commission and
61 the European Free Trade Association.

62

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<https://standards.iteh.ai/catalog/standards/sist/78705c20-4cb7-4388-a11d-767eb7c13b5b/sist-en-50600-3-1-2016>

63 Introduction

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

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

73 The implementation of data centres varies in terms of:

- 74 a) purpose (enterprise, co-location, co-hosting, or network operator facilities);
- 75 b) security level;
- 76 c) physical size;
- 77 d) accommodation (mobile, temporary and permanent constructions).

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

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

- 85 1) owners, facility managers, ICT managers, project managers, main contractors;
- 86 2) architects, consultants, building designers and builders, system and installation designers;
- 87 3) facility and infrastructure integrators, suppliers of equipment;
- 88 4) installers, maintainers.

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

90 EN 50600-1: Information technology – Data centre facilities and infrastructures – Part 1: General concepts;

91 EN 50600-2-1: Information technology – Data centre facilities and infrastructures – Part 2-1: Building
92 construction;

93 EN 50600-2-2: Information technology – Data centre facilities and infrastructures – Part 2-2: Power
94 distribution;

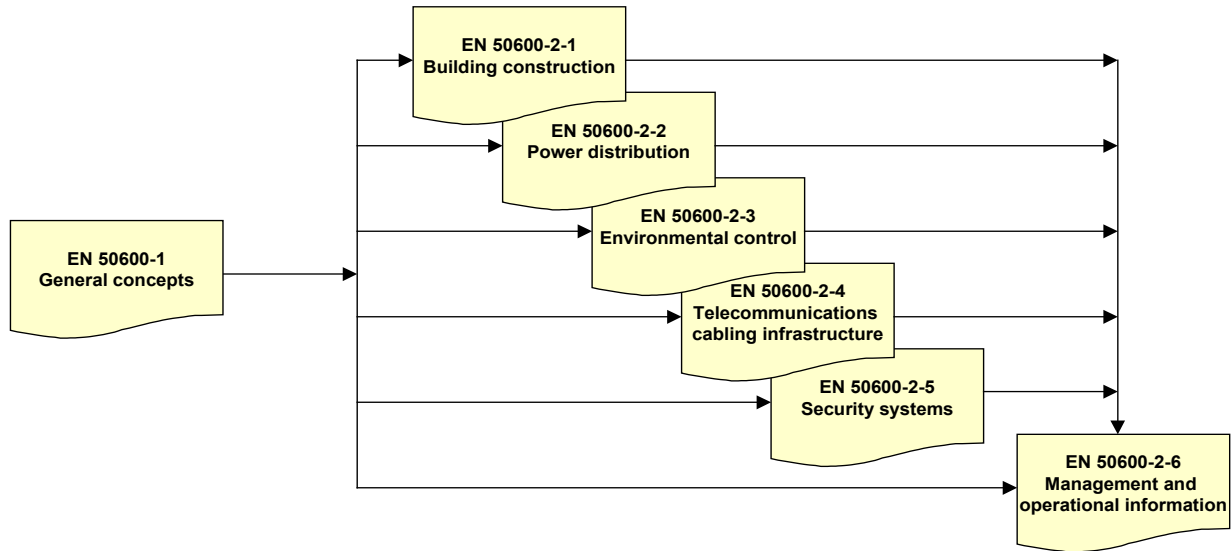
95 EN 50600-2-3: Information technology – Data centre facilities and infrastructures – Part 2-3: Environmental
96 control;

97 EN 50600-2-4: Information technology – Data centre facilities and infrastructures – Part 2-4:
98 Telecommunications cabling infrastructure;

99 EN 50600-2-5: Information technology – Data centre facilities and infrastructures – Part 2-5: Security
100 systems;

101 EN 50600-2-6: Information technology – Data centre facilities and infrastructures – Part 2-6: Management
102 and operational information.

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



104

105

Figure 1 – Schematic relationship between the EN 50600 standards

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

109 This European Standard addresses the operational and management information (in accordance with the
 110 requirements of EN 50600-1). A data centre’s primary function typically is to house large quantities of
 111 computer and telecommunications hardware which affects the construction, operation, and physical security.
 112 Most of the data centres may impose special security requirements. Therefore, the planning of a data centre
 113 by the designer and the various engineering disciplines that will assist in the planning and implementation of
 114 the design of the data centre i.e. electrical, mechanical, security, etc. shall be carried out in cooperation with
 115 the IT and telecommunications personnel, network professionals, the facilities manager, the IT end users,
 116 and any other personnel involved.

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

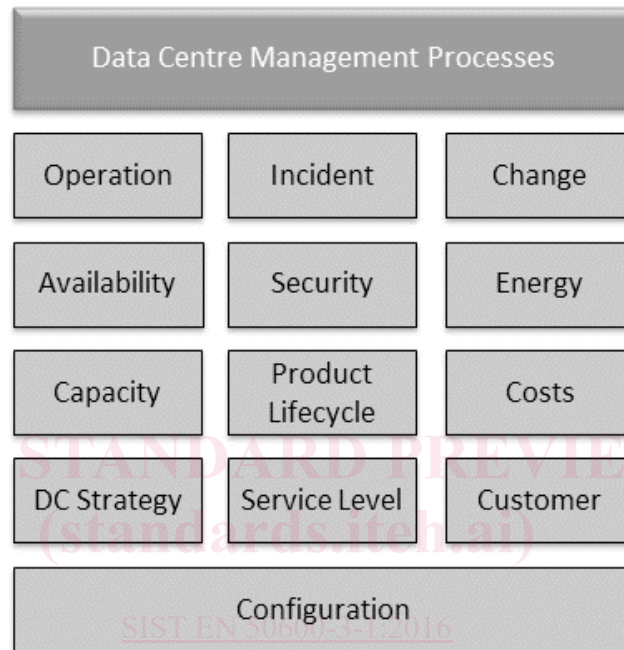
119 This series of European Standards does not address the selection of information technology and network
 120 telecommunications equipment, software and associated configuration issues.

121

122 **1 Scope and conformance**

123 **1.1 Scope**

124 This European Standard specifies processes for management and operating of data centres. Primary focus
 125 is on operational processes to deliver the expected level of resilience, availability, security and energy
 126 efficiency. Secondary focus is on management processes to align the actual and future demand of users.
 127 Figure 2 shows an overview of all processes. In addition, the transition from planning and building to
 128 operating a data centre is considered as acceptance test process in Clause 4.



129

130

Figure 2 - Data centre management processes overview

131 Although the focus is not on Key Performance Indicators (KPI), KPI are provided with the processes where
 132 applicable.

133 NOTE 1 Problem Management is not included and can be set up when needed.

134 NOTE 2 Only processes specific for data centres are in the scope of this document. Business processes like people management,
 135 financial management etc. are out of scope.

136 NOTE 3 Be aware of the required specific DC people skills.

137 **1.2 Conformance**

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

- 139 a) It shall implement a data centre strategy process;
- 140 b) It shall implement the following priority 1 processes:
- 141 – Operations management;
 - 142 – Incident management;
 - 143 – Security management;
 - 144 – Customer management.
- 145 c) It shall determine the PUE;
- 146 d) it shall comply with Operational Excellence level 1.

147 2 Normative references

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

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

152 3 Terms, definitions and abbreviations

153 3.1 Definitions

154 For the purposes of this document, the terms and definitions given in EN 50600-1:2012, EN 50600-2-X and
155 the following apply.

156 3.1.1

157 **availability management**

158 process for monitoring, analysis, reporting and improvement of availability

159 3.1.2

160 **capacity Management**

161 process for monitoring, analysis, reporting and improvement of capacity

162 3.1.3

163 **change management**

164 process for recording, coordination, approval and monitoring of all changes

165 3.1.4

166 **configuration item**

167 an entity managed by configuration management

168 3.1.5

169 **configuration management**

170 process for logging and monitoring of configuration items

171 3.1.6

172 **cost distribution model**

173 costs that cannot be directly related to an infrastructure item need to be distributed by cost models

174 3.1.7

175 **cost management**

176 process for monitoring, analysis and reporting of all infrastructure related costs

177 3.1.8

178 **customer management**

179 process for management of customers responsibilities

180 3.1.9

181 **data centre strategy**

182 process for alignment of actual data centre's capabilities and future demands of data centre's users and
183 owners

184 3.1.10

185 **energy management**

186 process for monitoring, analysis, reporting and improvement of energy efficiency

187 3.1.11

188 **incident management**

189 process for responding to unplanned events and recovery of normal operation state

- 190 **3.1.12**
 191 **incident severity**
 192 incident category according to the four impact categories described EN 50600-1:2012, 4.3
- 193 **3.1.13**
 194 **key performance indicator**
 195 a parameter used to evaluate performance
- 196 **3.1.14**
 197 **operations management**
 198 process for infrastructure maintenance, monitoring and event management
- 199 **3.1.15**
 200 **product lifecycle management**
 201 process for managing the timely renewal of infrastructure components and review of product lifecycle costs
- 202 **3.1.16**
 203 **provisioned capacity**
 204 capacity of the data centre's actual installed infrastructure
- 205 **3.1.17**
 206 **security incident**
 207 an unplanned event resulting in an actual or potential breach of security
- 208 **3.1.18**
 209 **security management**
 210 process for design and monitoring of security policies, analysis, reporting and improvement of security
- 211 **3.1.19**
 212 **service level management**
 213 process for monitoring, analysis and reporting of service level compliance
- 214 **3.1.20**
 215 **service level agreement**
 216 an agreement defining the content and quality of the service to be delivered and the timescale in which it is
 217 to be delivered
- 218 **3.1.21**
 219 **total capacity**
 220 maximum capacity the data centre was designed for at full use in terms of e.g. space, power and cooling
- 221 **3.1.22**
 222 **used capacity**
 223 data centre's actual capacity used by the IT and facility in terms of e.g. space, power and cooling
- 224 **3.2 Abbreviations**
- 225 For the purposes of this document the abbreviations of EN 50600-1 and the following apply:
- 226 CRAC Computer Room Air Conditioner
- 227 HVAC Heating, Ventilation and Air Conditioning
- 228 KPI Key Performance Indicator
- 229 SLA Service Level Agreement
- 230 TCO Total Cost of Ownership

231 **4 Operational information and parameters**

232 **4.1 General**

233 In general, operators should understand the data centre facility infrastructure and run it at the optimum point.
234 This is extremely important, not only for efficient operations under various normal conditions, but also defines
235 the capability of the operator to handle various failure conditions.

236 At handover to operations instructions shall be delivered by planning and engineering on how to handle
237 operational parameters of the infrastructure at different loads. Especially at the beginning of data centre life
238 cycle IT loads will be low; therefore instructions for efficient part load operation are very important.

239 The following clauses describe the information that operation retrieves from the various data centre
240 subsystems of EN 50600-2-1 to EN 50600-2-5 together with operational parameters that shall be configured
241 during the lifecycle of the data centre to achieve the goal to run at the optimal point for the given IT load.

242 **4.2 Building construction (EN 50600-2-1)**

243 All information delivered by the building management systems relating to any of the other subsystems in the
244 building will be described in the related clause.

245 The following information shall be handed over to operations:

246 a) Maximum bearable load by construction;

247 b) Escape routes;

248 c) Technical: transmission heat/cooling;

249 d) Documentation about installation for flood control;

250 e) Regulatory requirements;

251 f) Acoustic protection;

252 g) Use of water-polluting substances (effluent water);

253 h) Environmental regulations.

254 **4.3 Power distribution (EN 50600-2-2)**

255 **4.3.1 General**

256 To operate a data centre in a safe and efficient mode the following information is required at all metering
257 points defined by the level of granularity:

258 a) active power load;

259 b) apparent power load;

260 c) power factor;

261 d) Voltage;

262 e) Current on each phase;