
**Information technology — Data centre
facilities and infrastructures —**

**Part 7:
Management and operational
information**

*Technologie de l'information — Installation et infrastructures de
centres de traitement de données —*

Partie 7: Informations de gestion et de fonctionnement

Document Preview

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 39, *Sustainability for and by Information Technology*.

A list of all parts in the ISO/IEC TS 22237 series can be found on the ISO website.

<https://standards.iteh.ai/catalog/standards/iso/ddf86e77-cccb-4695-b811-16e069d38d4c/iso-iec-ts-22237-7-2018>

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.

The ISO/IEC TS 22237 series 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, consultants, 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 document, the ISO/IEC TS 22237 series will comprise the following documents:

ISO/IEC TS 22237-1, *Information technology — Data centre facilities and infrastructures — Part 1: General concepts*;

ISO/IEC TS 22237-2, *Information technology — Data centre facilities and infrastructures — Part 2: Building construction*;

ISO/IEC TS 22237-3, *Information technology — Data centre facilities and infrastructures — Part 3: Power distribution*;

ISO/IEC TS 22237-4, *Information technology — Data centre facilities and infrastructures — Part 4: Environmental control*;

ISO/IEC TS 22237-5, *Information technology — Data centre facilities and infrastructures — Part 5: Telecommunications cabling infrastructure*;

ISO/IEC TS 22237-6, *Information technology — Data centre facilities and infrastructures — Part 6: Security systems*;

ISO/IEC TS 22237-7, *Information technology — Data centre facilities and infrastructures — Part 7: Management and operational information*;

The inter-relationship of the specifications within the ISO/IEC TS 22237 series is shown in [Figure 1](#).

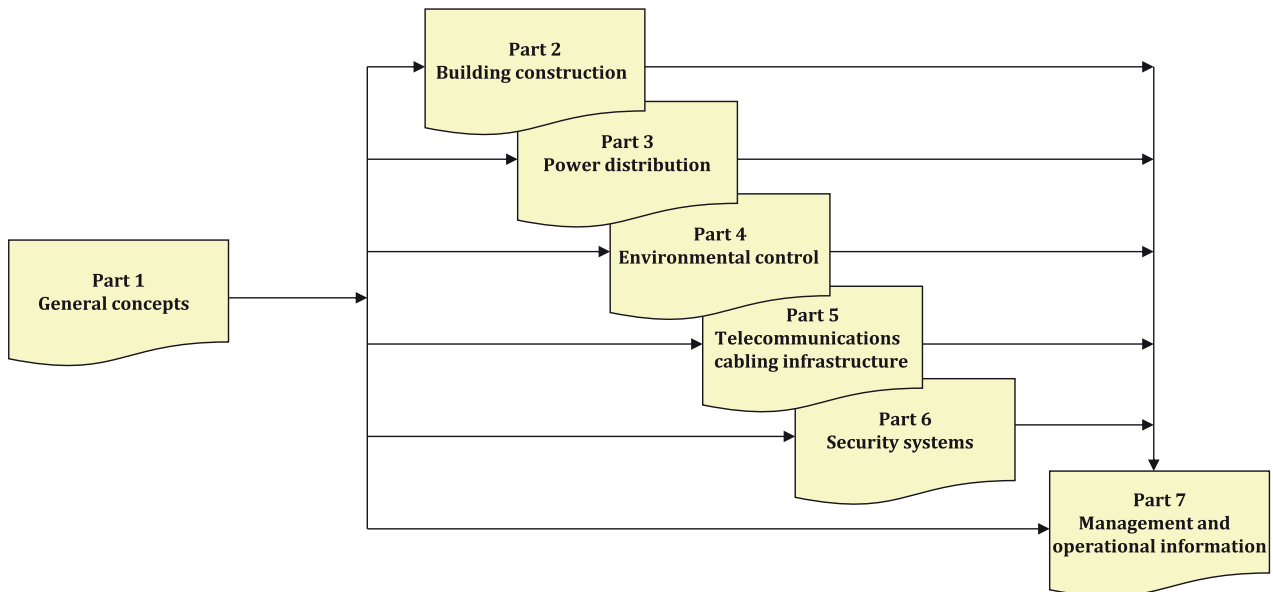


Figure 1 — Schematic relationship between the ISO/IEC TS 22237 series of documents

ISO/IEC TS 22237-2 to ISO/IEC TS 22237-6 specify requirements and recommendations for particular facilities and infrastructures to support the relevant classification for “availability”, “physical security” and “energy efficiency enablement” selected from ISO/IEC TS 22237-1.

This document addresses the operational and management information (in accordance with the requirements of ISO/IEC TS 22237-1). A data centre’s primary function typically is to house large quantities of computer and telecommunications hardware which affects the construction, operation, and physical security. Most of the data centres may impose special security requirements. Therefore, the planning of a data centre by the designer and the various engineering disciplines that will assist in the planning and implementation of the design of the data centre, i.e. electrical, mechanical, security, etc. shall be carried out in cooperation with the IT and telecommunications personnel, network professionals, the facilities manager, the IT end users, and any other personnel involved.

This document is intended for use by and collaboration between facility managers, ICT managers, and main contractors.

The ISO/IEC TS 22237 series does not address the selection of information technology and network telecommunications equipment, software and associated configuration issues.

Information technology — Data centre facilities and infrastructures —

Part 7: Management and operational information

1 Scope

This document specifies processes for the management and operation of data centres. The primary focus of this document is the operational processes necessary to deliver the expected level of resilience, availability, risk management, risk mitigation, capacity planning, security and energy efficiency.

The secondary focus is on management processes to align the actual and future demands of users. [Figure 2](#) shows an overview of related processes.

The transition from planning and building to operation of a data centre is considered as part of the acceptance test process in [Clause 6](#).

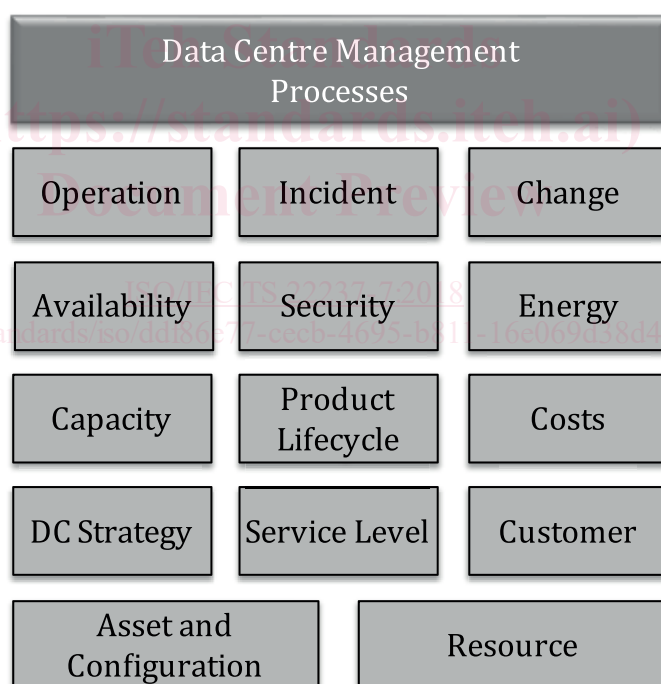


Figure 2 — Data centre management processes overview

NOTE 1 Only processes specific for data centres are in the scope of this document. Business processes like people management, financial management, etc. are out of scope.

NOTE 2 Specific skill sets are required of those working in and operating a data centre.

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 TS 22237-1:2018, *Information technology — Data centre facilities and infrastructures — Part 1: General concepts*

ISO/IEC TS 22237-2, *Information technology — Data centre facilities and infrastructures — Part 2: Building construction*

ISO/IEC TS 22237-3, *Information technology — Data centre facilities and infrastructures — Part 3: Power distribution*

ISO/IEC TS 22237-4, *Information technology — Data centre facilities and infrastructures — Part 4: Environmental control*

ISO/IEC TS 22237-5, *Information technology — Data centre facilities and infrastructures — Part 5: Telecommunications cabling infrastructure*

ISO/IEC TS 22237-6, *Information technology — Data centre facilities and infrastructures — Part 6: Security systems*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC TS 22237-1 to ISO/IEC TS 22237-6 and the following apply.

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

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

3.1.1

availability management

process for monitoring, analysis, reporting and improvement of availability

3.1.2

capacity management

process for monitoring, analysis, reporting and improvement of capacity

3.1.3

change management

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

3.1.4

configuration item

entity managed by configuration management

3.1.5

configuration management

process for logging and monitoring of configuration items

3.1.6

cost distribution model

model to distribute costs that cannot be directly related to an infrastructure item

3.1.7**cost management**

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

3.1.8**customer management**

process for management of customer's responsibilities

3.1.9**data centre strategy**

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

3.1.10**energy management**

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

3.1.11**incident management**

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

3.1.12**incident severity**

incident category according to the four impact categories described in ISO/IEC TS 22237-1:2018, 5.3

3.1.13**key performance indicator**

parameter used to evaluate performance

3.1.14**operations management**

process for infrastructure maintenance, monitoring and event management

3.1.15**product lifecycle management**

process for managing the timely renewal of infrastructure components and review of product lifecycle costs

3.1.16**provisioned capacity**

capacity of the data centre's actual installed infrastructure

3.1.17**security incident**

unplanned event resulting in an actual or potential breach of security

3.1.18**security management**

process for design and monitoring of security policies, analysis, reporting and improvement of security

3.1.19**service level management**

process for monitoring, analysis and reporting of service level compliance

3.1.20**service level agreement**

agreement defining the content and quality of the service to be delivered and the timescale in which it is to be delivered

3.1.21

total capacity

maximum capacity the data centre was designed for at full use in terms of e.g. space, power and cooling

3.1.22

used capacity

data centre's actual capacity used by the IT and facility in terms of e.g. space, power and cooling

3.2 Abbreviated terms

For the purposes of this document, the abbreviated terms given in ISO/IEC TS 22237-1 and the following apply:

CRAC Computer Room Air Conditioning

CUE Carbon Usage Effectiveness

EER Energy Efficiency Ratio

ERE Energy Re-use Efficiency

HVAC Heating, Ventilation and Air Conditioning

IST Integrated Systems Test

KPI Key Performance Indicator

PUE Power Usage Effectiveness^a

pPUE Partial Power Usage Effectiveness^a

REF Renewable Energy Factor

SLA Service Level Agreement

TCO Total Cost of Ownership

WRE Water Re-use Effectiveness

WUE Water Usage Effectiveness

^a It is recognized that the term “efficiency” should be employed for PUE but “effectiveness” provides continuity with earlier market recognition of the term.

4 Conformance

For a data centre to conform to this document it shall have:

- a) an implemented data centre strategy defined by stated business requirements;
- b) an implemented set of service management policies and procedures covering the following:
 - 1) operations management;
 - 2) incident management;
 - 3) security management;
 - 4) customer management;
- c) a monitored PUE KPI;