
**Information technology — Data
centres — Guidelines on holistic
investigation methodology for data
centre key performance indicators**

*Technologies de l'information — Centres de données — Lignes
directrices relatives à la méthodologie de recherche holistique pour
les indicateurs de performance clé du centre de données*

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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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 39, *Sustainability for and by Information Technology*.

Introduction

The ISO/IEC 30134 series defines key performance indicators (KPIs) for data centre resource effectiveness. There are many aspects to be considered in order to improve data centre resource effectiveness. As for resources, it may include not only energy, but also water and other natural resources. As for data centre components, they include air conditioning, power supply, servers, storages, and network equipment. However, it is difficult to include all aspects into one KPI, so multiple KPIs are under development, which measure each aspects of resource effectiveness improvement. Resource effectiveness improvement in each aspect will be performed by measuring each KPI. On the other hand, there is a need to observe the state and trend of data centre as a whole, or holistically, by monitoring multiple KPIs in a single view. Analysis of the KPIs from the overall perspective is also referred to as a holistic investigation method. This document describes a spider web chart-based method and control chart method extending the functionality of the conventional spider web chart for viewing and analysing KPIs for data centre resource effectiveness. It also investigates considerations for applying holistic investigation methods to resource effectiveness evaluation of multiple data centre KPIs. The usefulness and applicability of holistic methods are discussed using a SWOT analysis. The methods described in this document are intended for analysis and continuous improvement of a specific data centre and not for comparing different data centres.

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Information technology — Data centres — Guidelines on holistic investigation methodology for data centre key performance indicators

1 Scope

This document describes backgrounds, motivation, and general concept of holistic methodology for data centre key performance indicators (KPIs) to investigate the status of KPIs. It discusses the usefulness of holistic investigation methodology in terms of aggregating a KPI across different contexts, aggregation of two or more KPIs within a single context, aggregation of two or more KPIs across multiple contexts, and aggregation of the multiple KPIs into a single indicator. This document presents a conventional spider web chart-based data centre KPIs status observation method and a control chart method including upper bound and lower bound of the operational status of KPIs. This document presents SWOT analysis results for both methodologies. The methods described in this document are aimed at the self-monitoring of a data centre, not comparison among data centres.

Specifically, this document

- a) describes backgrounds, motivation, and general concept of holistic investigation methodology for data centre KPIs,
- b) analyses the usefulness of holistic investigation methodology for aggregating KPIs,
- c) describes a spider web chart-based KPIs status observation method and a control chart extending spider web chart to observe the operational status of KPIs,
- d) describes alternative and/or additional methods of representing dissimilar KPIs to track holistic resource effectiveness of the data centre, and
- e) presents SWOT analysis results for holistic investigation methods described in this document.

2 Normative references

There are no normative references in this document.

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions 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 <http://www.iso.org/obp>

3.1.1

holistic investigation method

data centre resource effectiveness investigation method considering multiple key performance indicators