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*Information technology - Security techniques -
Modes of operation for an n-bit block cipher*

Developed by



Where IT all begins



INCITS/ISO/IEC 10116:2017 (2018)

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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.

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This fourth edition cancels and replaces the third edition (ISO/IEC 10116:2006) and ISO/IEC 10116:2006/Cor1:2008, which have been technically revised.

The main technical changes between the third edition and this fourth edition are as follows:

- a) the inclusion of padding within the normative scope of ISO/IEC 10116;
- b) the inclusion of methods for avoiding ciphertext expansion for CBC, CFB, OFB and CTR modes.

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Introduction

This document specifies modes of operation for an n -bit block cipher. These modes provide methods for encrypting and decrypting data using a block cipher.

This fourth edition of ISO/IEC 10116 specifies five modes of operation:

- a) Electronic Codebook (ECB);
- b) Cipher Block Chaining (CBC);
- c) Cipher Feedback (CFB);
- d) Output Feedback (OFB);
- e) Counter (CTR).

NOTE [Annex C](#) presents figures describing the modes of operation. [Annex D](#) provides numerical examples of the modes of operation.