The Ethernet

A Local Area Network

Data Link Layer
and
Physical Layer
Specifications

digital

Digital Equipment Corporation
Maynard, MA

intel

Intel Corporation
Santa Clara, CA

XEROX

Xerox Corporation
Stamford, CT

Version 2.0

November, 1982

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Preface

This document contains the specification of the Ethernet, a local area network developed jointly by Digital Equipment Corporation, Intel Corporation, and Xerox Corporation. The Ethernet specification is the result of an extensive collaborative effort of the three corporations, and several years of work at Xerox on an earlier prototype Ethernet.

This specification is intended as a design reference document, rather than an introduction or tutorial. Readers seeking introductory material are directed to the reference list in Section 2, which cites several papers describing the intent, theory, and history of the Ethernet.

This document contains 8 sections, falling into four main groups:

Sections 1, 2, and 3 provide an overall description of the Ethernet, including its goals, and the scope of the specification.

Sections 4 and 5 describe the architectural structure of the Ethernet in terms of a functional model consisting of two layers, the Data Link Layer and the Physical Layer.

Sections 6 and 7 specify the two layers in detail, providing the primary technical specification of the Ethernet.

Section 8 provides a description and specification for a configuration testing protocol for Network Management services. This protocol provides a minimum capability for testing any station's ability to communicate with other stations on the network.

Readers wishing to obtain an initial grasp of the organization and content of the specification will be best served by reading Sections 1, 3, and 4. Readers involved in actual implementation of the Ethernet will find Sections 5, 6, 7, and 8 to contain the central material of the specification. Section 2 provides references, and the appendices provide supplementary material.

The approach taken in the specification of the Data Link Layer in Section 6 is a procedural one; in addition to describing the necessary algorithms in English and control flow charts, the specification presents these algorithms in the language Pascal. This approach makes clear the required behavior of the Data Link Layer, while leaving individual implementations free to exploit any appropriate technology.

Because the procedural approach is not suitable for specifying the details of the Physical Layer, Section 7 uses carefully worded English prose and numerous figures and tables to specify the necessary parameters of this layer.

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