IBM Token-Ring Network

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Introduction and Planning Guide

Fourth Edition (September 1990)

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IBM Token-Ring Network OEMI

The following documents, together, comprise the IBM Token-Ring Network Other Equipment Manufacture Interface.

- *IBM Cabling System Technical Interface Specification*, GA27-3773
- *IBM Local Area Network Technical Reference*, SC30-3383
- *IBM Token-Ring Network Architecture Reference*, 6165877
- *Token Ring Access Method and Physical Layer Specification*, IEEE Standard 802.5-1989.

Preface

This manual is written for the person who will plan for the installation of an IBM Token-Ring Network.

The most important requirement for you as a network planner is to be familiar with the needs of your organization. You do not need a background in Local Area Networks (LANs), but you should be familiar with the prerequisite publications listed below. This manual introduces you to the IBM Token-Ring Network and explains the process of planning the network in detail.

The IBM Token-Ring Network has been designed to be used with the IBM Cabling System. This manual can be used to plan networks for buildings that have already been wired with the IBM Cabling System and buildings for which permanently installed IBM Cabling System cable is planned.

There are various other media that the IBM Token-Ring Network may use.

For a network operating at 4 megabits per second (Mbps), you may, for instance, want to use IBM Cabling System patch cables instead of permanently installed building cable. In that case, see the *IBM Token-Ring Network Guide to Small Networks*. See Appendix A of this manual to plan 16 Mbps rings using patch cables.

For networks operating at 4 Mbps, you may want to use telephone twisted-pair media. See the *IBM Token-Ring Network Telephone Twisted-Pair Media Guide* for information about planning networks using that media.

Optical fiber cables can be used for networks operating at both 4 and 16 Mbps. If you want to use optical fiber cables and are planning a new installation, see Appendix D of this manual for information about using 62.5/125-micron optical fiber cable. However, if you want to use another size of optical fiber cable, see the *IBM Token-Ring Network Optical Fiber Cable Options* manual for guidance in qualifying other kinds of optical fiber cable for use with the IBM Token-Ring Network.

Prerequisite Publications

The following IBM publications are available from your IBM representative or your local IBM branch office:

- *A Building Planning Guide for Communication Wiring*, G320-8059
- *Introduction to Local Area Networks*, GC20-8203
- *IBM Cabling System Planning and Installation Guide*, GA27-3361
- *Using the IBM Cabling System with Communication Products*, GA27-3620.

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Related Publications

Consult the following publications for additional information about the IBM Token-Ring Network. To obtain these publications, contact your IBM representative or your local IBM branch office.

- *IBM Token-Ring Network Guide to Small Networks*, SK2T-0300
- *IBM Token Ring Network Telephone Twisted-Pair Media Guide*, GA27-3714
- *IBM Token-Ring Network Optical Fiber Cable Options*, GA27-3747
- *IBM Local Area Network Administrator's Guide*, GA27-3748
- *IBM Token-Ring Network Installation Guide*, GA27-3678
- *IBM Token-Ring Network Problem Determination Guide*, SY27-0280
- *IBM Local Area Network Technical Reference*, SC30-3383
- *IBM Token-Ring Network Architecture Reference*, SC30-3374
- *IBM Cabling System Technical Interface Specification*, GA27-3773.

In addition to the publications listed above, IBM Token-Ring Network hardware and program products are accompanied by the documentation that is specific to that product.

The contents and relationships among these publications are shown in the following chart.

Title	Planning	Cable Installation	Network Introduction	Network Installation	Network Software	Network Theory	Problem Determination
A Building Planning Guide for Communication Wiring	✓						
Introduction to Local Area Networks	✓		✓				
IBM Cabling System Planning and Installation Guide	✓	✓					✓
Using the IBM Cabling System with Communication Products	✓						
IBM Token-Ring Network Introduction and Planning Guide	✓		✓				
IBM Token-Ring Network Installation Guide				✓			
IBM Token-Ring Network PC Adapter Guide to Operations				✓	✓		
IBM Token-Ring Network PC Adapter Hardware Maintenance and Service							✓
IBM Local Area Network PC Adapter Technical Reference						✓	
IBM Token-Ring Network Architecture Reference						✓	
IBM Token-Ring Network Problem Determination Guide							✓
IBM Token-Ring Network/PC Network Interconnect User's Guide					✓		
IBM LAN Support Program User's Guide					✓		
IBM Token-Ring Network Guide to Small Networks	✓		✓	✓			
IBM Token-Ring Network Telephone Twisted-Pair Media Guide	✓		✓				✓
IBM Token-Ring Network Optical Fiber Cable Options	✓						
IBM Local Area Network Administrator's Guide	✓			✓	✓		✓

Using this Manual

Chapter 1 contains important introductory material about the IBM Token-Ring Network. You should read it first.

Chapter 2 describes planning both 4 and 16 Mbps networks for buildings with permanently installed IBM Cabling System cable. As you read Chapters 1 and 2, you may find it helpful to consult the charts in the pocket in the back of the manual depicting typical IBM Token-Ring Network installations.

Chapter 3 describes how to fill out the planning charts so that both installation and problem determination can be accomplished easily.

Chapter 4 describes the connections available to the rest of your establishment's network. Joining rings together using bridges, using gateways, and direct connection to host computers are all discussed.

Chapter 5 describes how to schedule and supervise the installation and checkout of an IBM Token-Ring Network.

Chapter 6 helps you to ensure that changes to the network, including migration from a 4 Mbps network to a 16 Mbps network, are completely planned and documented. Always remember that accurate network documentation is vital for network maintenance and problem determination.

Appendix A will help you if your installation does not fit within the guidelines in Chapter 2.

Appendix B provides you with blank planning forms. You may make as many copies of these forms as you need to plan your network.

Appendix C contains a sample program listing that will help you automate the record-keeping described in Chapter 2.

The charts in the pocket in the back of the manual depict typical IBM Token-Ring Network configurations and show filled-in copies of the forms necessary to plan the network. Many of the illustrations in the manual are portions of these charts used to highlight portions of the planning process.

Appendix D contains a specification for 62.5/125-micron optical fiber cable that is both suitable for use with IBM Token-Ring Networks and meets the standards of the cable specified by the Fiber Distributed Data Interface standard.

The *Glossary* defines terms that apply to LANs in general and the IBM Token-Ring Network in particular.

Changes to this Edition

This edition adds information about the IBM 8230 Controlled Access Unit. Information about using IBM 8218 Copper Repeaters and IBM 8219 Optical Fiber Repeaters has been moved from Chapter 2 to Appendix A. Appendix D has been added to offer guidance on selecting optical fiber cables for use with IBM Token-Ring Networks.

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