

HP Token Ring/9000 for Series 800 Computers

Technical Data

Product Number

J2166A

HP Token Ring/9000 provides all the necessary hardware to interface between an HP 9000 Series 800 computer and a Token Ring Local Area Network. Also included in this link product is networking software corresponding to Layers 2 through 5 of the Open Systems Interconnection (OSI) Reference Model and node management software.

Users can choose to write their own user software to access Berkeley Sockets software provided, or choose one of the higher-level networking software products provided by Hewlett-Packard.

HP Token Ring/9000 Connectivity

For those users needing multivendor communications, HP Token Ring/9000 can be used with ARPA Services, NFS Services, and LAN Manager/X. ARPA Services provide de facto networking software as defined by the Department of Defense Advanced Research Project Agency and the Berkeley Software Distribution (BSD) UNIX^a 4.3 system. NFS/9000 allows HP 9000 computers to share file systems in a multivendor network of machines and operating systems. LAN Manager/X is an advanced full-featured network operating environment that enables UNIX-based machines to operate as file and resource servers to MS-DOS^a and OS/2 PC workstations.

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HP Token Ring/9000 Features

- † A complete link connection to the Token Ring network, which includes hardware and transport software
- † Full interoperability with IEEE 802.5 and IBM Token Ring
- † 4 Mbits/second or 16 Mbits/second burst transfer rate

- † Network transport software based on de facto industry-standard Defense Advanced Research Projects Agency (DARPA) protocols, corresponding to the transport and network layer functions
- † Integrated node management software provides online network configuration and logging
- † Supports Source Routing to remote connections through Source Routing Bridges configured to use a maximum packet size of 4472 bytes
- † Supports HP 9000 Series 800 as LAN-to-LAN router

Hardware Components

The HP Token Ring/9000 adapter card manages packet buffering, processes IEEE 802.5 protocols, and uses an LED to display the Token Ring adapter status.

A 9-pin D-type connector on the Token Ring adapter card is used to connect the adapter to the Token Ring network through a cable that plugs into a Multi-station Access Unit (MsAU). On a 4 Mbit/second Token Ring network, the following IBM cable types are supported:

| Data Grade | AWG | Type |
|-------------------|------------|---|
| Type 1 | 22 | 2-wire shielded twisted pair |
| Type 2 | 22 | 2-wire shielded or 4-wire unshielded twisted pair |
| Type 3 | 22, 24 | twisted-pair unshielded |
| Type 6 | 26 | 2-wire shielded twisted pair |
| Type 9 | 26 | 2-wire shielded twisted pair |

For Type 3 unshielded twisted pair (UTP), the customer will need to use a media filter, which attaches to the DB9 connector. This is done for impedance matching from 150 Ohm (shielded twisted pair) to 100 Ohm UTP. Additionally, only shielded cables are supported at the 16 Mbit/second data link rate.

Features

- Uses TMS380C16/04 TI Token Ring communication processor
- Uses 512K bytes of DRAM space for MAC code and data storage
- Uses frame size up to 4096 bytes
- Supports early token release at 16 Mbits/second
- Supports up to 255 link stations
- Environmental: Class B2
- EMC: complies to FCC A and VDE Level B

Environmental Characteristics

Temperature

Nonoperating: -40°C to $+75^{\circ}\text{C}$

(-40°F to $+167^{\circ}\text{F}$)

Operating: 0°C to $+70^{\circ}\text{C}$

(0°F to 158°F)

Humidity

5% to 95% relative humidity

Electrical Specifications

Maximum power consumption is 10 watts at 5 volts.

Software Components

HP Token Ring/9000 includes software corresponding to Layers 2 through 5 of the Open Systems Interconnection (OSI) Reference Model. The link layer, corresponding to layer 2 of the OSI model, consists of the link level IEEE 802.5 protocol. Transmission consists of sending addressed frames of data on the cable at a signaling rate of either 4 megabits per second or 16 megabits per second.

The Networking Layer, corresponding to OSI Layer 3, is based on the ARPA Internet Protocol (IP). IP provides fragmentation and reassembly of data as well as internal addressing.

The Transport Layer, corresponding to OSI Layer 4, is based on the ARPA Transmission Control Protocol (TCP). TCP provides end-to-end reliable, connection-oriented services with flow control and multiplexing. TCP has mechanisms for detecting duplicate, lost, or out-of-sequence packets. Layer 4 also provides the User Datagram Protocol (UDP) supported by BSD IPC. UDP provides an unacknowledged datagram service.

BSD Sockets is an interface between the upper layers and the product's transport protocols. BSD Sockets enable customers to establish peer-to-peer communications between processes running on HP 9000 computers and processes running on other systems using BSD 4.2 or later.

The node manager software uses the commands of the nodal management module to establish computer-to-network connections

and to maintain the network. Network maintenance operations include initialization and configuration of the networking products, establishing network security, and using various diagnostic tools to ensure proper network operation. The diagnostics include loopback verification, nodal statistics, tracing, and logging.





Installation Policy

Please contact your HP Sales Representative or local HP sales office for more information on the installation policy of this software product in your system environment.

Customer Responsibility

HP Token Ring/9000 for the Series 800 is customer installable and configurable. Installation of HP Token Ring/9000 is the responsibility of the customer. Prior to installing HP Token Ring/9000, the customer should complete the following tasks:

- | Install HP-UX 8.02 on the HP 9000 Series 800
- | Install the Token Ring wiring
- | Attach and configure all necessary networking devices, including any Token Ring accessories such as MsAUs and cables

The basic steps required to install HP Token Ring/9000 include loading the software, setting the adapter link speed, installing the Token Ring adapter card, attaching the system to the network, configuring the adapter card, and verifying the installation. Recommended reading prior to implementing a Token Ring network includes the manual  Installing and Administering HP Token Ring/9000 Software,  part number J2166-61001 and the  Quick Installation Guide,  part number J2166-61002.

For quick implementation of your network, a simplified service interface, verified network operation, and assured ongoing supportability, please refer to the "HP Network Startup" in this guide.

System Environment

HP Token Ring/9000 is supported on the HP 9000 Series 8X7 computer systems. The product supports up to two Token Ring adapter cards per system on the Series 8X7.

Ordering Information

HP Token Ring/9000 for the Series 8X7 includes the Token Ring adapter card, the Token Ring software driver and TCP/IP transport, the Series 800 HP-PB Token Ring Quick Installation Card, the HP-PB Token Ring Network Adapter Installation and Service manual, and the

Installing and Administering HP Token Ring/9000 Software manual.

Series 800 Hardware and Software

J2166A → HP Token Ring/9000

The HP Token Ring/9000 product (J2166A) must be ordered with a hardware option, a processor software option, and a media option. The hardware option (without a processor software option or a media option) may be ordered to obtain a second Token Ring adapter for use in the same system.

Processor Hardware Option
(must order)

20N Token Ring Hardware

Processor Software Options
(may choose one):

Processor:

- AH0** License to use on Tier 1
- AEL** License to use on Tier 2
- AE5** License to use on Tier 3
- AE6** License to use on Tier 4
- AEN** License to use on Tier 5
- AEP** License to use on Tier 6
- AH1** License to use on Tier 7

Media Options (may choose one):

- AA0** 1/4-inch cartridge tape
- AA1** 1/2-inch magnetic tape (1600 bpi)
- AAH** Digital Audio Tape (DAT)

Software Upgrade Options (may choose one):

Upgrade options are also provided for scalability. Previous purchase of HP Token Ring/9000 is required.

Processor Upgrades:

- OGR** for return credit for Tier 1
- OGE** for return credit for Tier 2
- OC8** for return credit for Tier 3
- OGS** for return credit for Tier 4
- OGT** for return credit for Tier 5
- OGU** for return credit for Tier 6

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