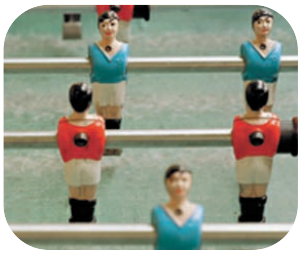
hp e3000
business servers



100Base-T
LAN Adapter

100Base-T Fast Ethernet is a growing industry-standard, high-speed local area network (LAN) technology

100 megabit per second local area network in the ethernet environment

A5230A — hardware for PCI-bus based A-/N-Class

A5488A — hardware for hp series 900

software driver for A5230A included in MPE/iX Release 7.0 operating system

B5427BA — software and documentation for hp series 900

It is supported by most vendors, including Hewlett-Packard, IBM, Adaptec, 3Com, Bay Networks, and Cisco, and endorsed by the IEEE 802 standards organization as the foundation for the IEEE 802.3u standard. 100Base-T LAN for HP e3000 Business Class Servers provides the link-level hardware card and software drivers to connect an HP e3000 HP-PCI or HP_PB-based server to a high-speed local area network at the link level. The link requires a hardware interface card with documentation, and a software driver with a license-to-use, ordered separately.

The link connects to 100Base-TX LANs at 100 Mb/s, and to either Ethernet or ISO/IEC 8802-3 LANs at 10 Mb/s. The connection is made to a single RJ-45 connector on the hardware interface card. Changing from 100Mb/s to 10Mb/s only requires running NMMGR to reconfigure the link, and plugging the card into a network of the appropriate speed and duplex setting. There are no jumpers to change or plugs to move.

Data frame compatibility with Ethernet or IEEE 802.3 is maintained in the 100 Mb/s mode. This provides customers with the ability to connect 100Base-T networks to existing 10Base-T networks through the use of a simple speed-matching bridge.

The hardware interface card must connect to an 100Base-T-compliant hub such as an HP AdvanceStack Switch 800T when operating at the 100 Mb/s rate, or to a 10Base-T-compliant hub such as HP AdvanceStack 10Base-T Hub-16U when operating at 10 Mb/s.

100Base-T description

The 100Base-T product for HP e3000 servers provides the link-level hardware and software to connect HP e3000 servers to local area networks. The products support system-to-system communications between HP-PCI-based HP e3000 servers, HP-UX workstations, PCs, and equipment from other vendors who support the IEEE 802.3u standard.

100Base-T is a new technology defined as the IEEE 802.3u standard. It provides a burst rate of 100 Mb/s over 2-pair Category 5 unshielded twisted-pair (UTP). 100Base-T supports all the network design rules and topologies of 10Base-T Ethernet networks. This allows organizations to make use of their existing network and Category 5 cable infrastructures (except for crossover cables) while upgrading to higher transmission speeds.

features

- Supports IEEE 802.3u standard (100 Mb/s) 100Base-TX and IEEE 802.3/Ethernet standard (10 Mb/s).
- Transparent to operating system and network management software (MPE/iX 5.5 Express 3 + PP5 or later).
- Completely configurable through NMMGR software.
- Connects to a 100Base-T or 10Base-T hub or switch.
- Uses Category 5 UTP wiring (only; requires 2 pairs).
- One RJ-45 connector supports either 10 Mb/s or 100 Mb/s.
- 100Base-T networks can connect to 10 Mb/s Ethernet networks using a 100:10 speed-matching bridge.
- Supports all existing Ethernet 10Base-T UTP network design topologies, including cascading (crossover cables are not supported).
- Optional autonegotiation feature, when used with a hub or switch which also supports it, automatically determines the optimum link speed and duplex setting.
- Meets or exceeds all Ethernet 10Base-T distance specifications.
- Supports TCP (transmission control protocol) and IP (internet protocol).
- Supports ARP (address resolution protocol) and HP-Probe protocol.
- Supports NS-3000 Services, ARPA Services, and BSD Sockets over TCP/IP.
- Supports HP Distributed Terminal Controllers (DTC), via a 100:10 bridge, for terminal and X.25 traffic.
- Supports Netwarer and AppleTalk for the HP e3000.
- Card activity and link status shown through LED display.

Like 10Base-T, the 100Base-T technology controls access to the network through the use of collision detection mechanisms. Data frames, which collide on the network, are automatically retransmitted by the link-level hardware at the source node.

100Base-T offers data frame compatibility with IEEE 802.3 and Ethernet. Frame compatibility allows users to leverage existing software applications when migrating to a 100Base-T network. While nodes using 100Base-T and nodes using 10 Mb/s Ethernet do not coexist on the same physical infrastructure, frame compatibility allows 100Base-T to connect into existing Ethernet networks via a simple bridge. 100Base-T can also be routed to 100VG, fiber distribution data interface (FDDI), and asynchronous transfer mode (ATM) backbones, as well as wide area network (WAN) connections.

100Base-T network structure

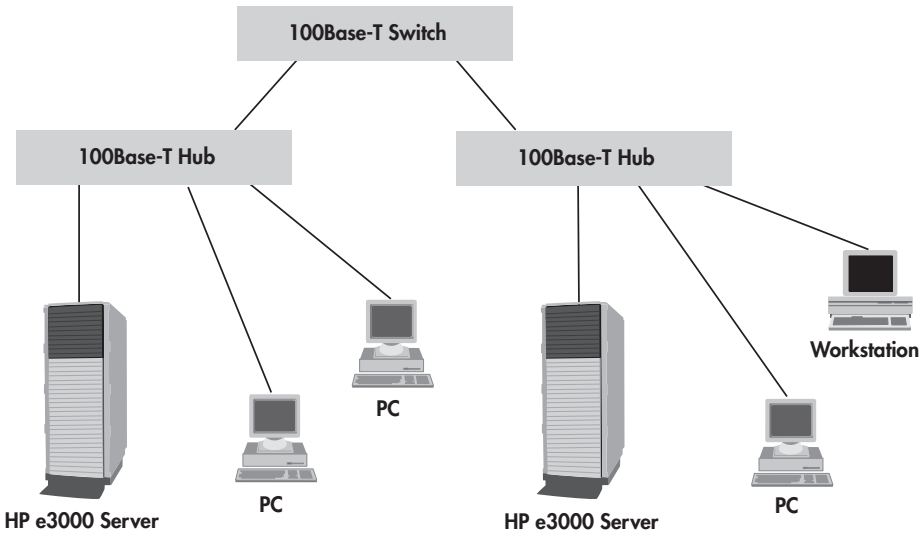
A 100Base-T network uses a star topology. End nodes connect to the network at a central hub or switch. A hub receives incoming packets and repeats them on all other active hub ports. A switch is an advanced, intelligent controller that routes and manages packets individually and collectively. Both units also provide isolation in the event of a misbehaving end node, unlike coaxial ThinLAN environments where a single problem node can bring down the entire network. A node may be a client or server computer or PC, or another 100Base-T device such as a hub, bridge, router, or switch. Refer to Figure 1 for a typical example.

The size, or diameter, of any 100Base-T network is limited by timing constraints imposed by collisions which occur within that network: collisions anywhere within the network must have time to propagate to all active nodes. One 100Base-T network consists of one collision domain. Within this domain, hubs are used to provide the desired number of node connections. Additional hubs can extend the network, providing the distance between any node and its hub does not exceed 100 meters, and the distance between any two nodes in the network does not exceed 205 meters. Interconnecting multiple 100Base-T networks is done through a 100Base-T switch, which separates the collision domains.

For example, you could build a 100Base-TX network having two hubs, each with 24 ports, each port having a 100-meter cable linking it to a remote node, plus a 5-meter cable interconnecting the two hubs: here no node will be more than 205 meters from any other node.

Each link connecting a 100Base-TX hub with a node must be Category 5 UTP cable, regardless of link speed. This requirement is dictated by hardware components used on the adapter card. The maximum length of the cable from a hub to each node is 100 meters. Two twisted pairs of wire are required. If you presently have a twisted-pair cable network that complies with Ethernet/802.3 Type 10Base-T specifications and is Category 5 UTP, you can generally use the same cables on your 100Base-T network.

figure 1. 100Base-T network structure



The following information applies to the 100Base-T implementation for HP e3000 Business Servers.

diagnostics

The 100Base-T product for HP e3000 Business Class Servers is supported by NMDUMP, NMMAINT, LINKCONTROL, NETTOOL, and the VGPBA Sysdiag diagnostic, all available to the HP e3000 customer. These tools provide information that can verify proper installation and configuration of the product and isolate failures.

installation policy

The 100Base-T product is SE installable. Prior to the installation, the customer is responsible for completing the following:

- Ensure the HP e3000 server is running the appropriate HP MPE/iX operating system.
- Ensure the proper installation of appropriate cable is completed.
- Ensure the appropriate hub(s) and/or switch(s) are installed.
- Verify that all product components are present.

During installation, the customer is responsible for completing the following:

- Observe proper anti-static precautions (an anti-static grounding strap is provided with each hardware package).
- Record adapter identification information and preconfigured station address for future reference and support calls.

product structure

The 100Base-T networking solution for specified HP e3000 A-/N-Class servers consists of an interface card and documentation, a software driver that is included in MPE/iX 7.0 Operating System. The 100Base-T networking solution for specified HP e3000 HP-PB-based servers consists of an interface card and documentation, a software driver with a license to use, all ordered separately.

The product is structured into the product numbers with options, as detailed below:

A- and N-Class servers

A5230A
- PCI 100Base-T LAN Adapter (hardware only)

Series 900 servers

A5488A
- 100Base-TX HP-PB High Speed Network Card (hardware only)

B5427BA
- 100Base-T HP-PB Network Link software
- Specify appropriate tier-level option
- Customized software is provided on DAT tape cartridge

supported platforms

The 100Base-T product is currently supported on all HP e3000 A-/N-Class and Series 900 Business Class servers.

- The HP e3000 server must be running an appropriate HP MPE/iX.

related products

- HP AdvanceStack 100Base-T Hub-8TXE: The J3235A AdvanceStack 100Base-T Hub-8TXE is an economical, entry-level high-speed hub with eight RJ-45 ports.
- HP AdvanceStack 100Base-T Hub-12TXM. The J3233A AdvanceStack 100Base-T Hub-12TXM with Management is a stackable high-speed hub with 12 RJ-45 ports and a Switch Port Module slot. It provides built-in management for the entire stack.
- HP Procurve 10/100 Hub 24: The J3295A Procurve 10/100 Hub 24 has 24 RJ-45 autosensing 10/100 Base-T ports.
- HP AdvanceStack Switch 800T: The J3245A AdvanceStack Switch 800T is a high-performance, manageable segment switch ideal for server farm connections. Has eight transceiver bays for 100Base-TX or 100Base-FX; comes with four autosensing 100Base-TX transceivers preinstalled.

- HP AdvanceStack Switch 2000: The J3100B AdvanceStack Switch 2000 delivers the utmost in network performance and protects your investment by providing the broadest selection of media connections in the industry. The six-slot universal port architecture of the Switch 2000 supports manageable 100VG, autosensing 100Base-T, 10Base-T, 10Base-FL, ATM, and FDDI modules, each purchased separately.
- HP Procurve Switch 8000M: The J4110A Procurve Switch 8000M is a modular chassis with ten universal slots accepting any combination of modules, including the 10/100Base-T Module (J4111A) which has eight autosensing 10/100Mbps Fast Ethernet ports.
- HP NightDirector/100 Ethernet Card: The D6692A 10/100Base-T NightDirector/100 Ethernet card is an autosensing PCI LAN adapter card with extra features, such as Remote Power On. Available singly or in a pack of ten.

related documents

Information about HP Network Connectivity products is available online via the World Wide Web, at URL www.hp.com/networking/.

environmental specifications

environmental characteristics	
operating temperature	0° C (32° F) to 55° C (131° F)
operating humidity	15% to 80% relative, non-condensing
operating altitude	3,050 meters (10,000 feet)
physical characteristics	
dimensions	18 cm by 8.9 cm (7.4 in by 3.5 in)
weight	280 g (9.9 oz)
electrical characteristics	2.00 A @ 5 V typical; 2.10 A @ 5 V maximum
communication standards	IEEE 802.3u (1995) 100 Mb/s Ethernet framing; IEEE 802.3 Type 10Base-T 10 Mb/s
safety standards	UL 1950, 2nd Edition; CSA 22.2 No. 950, 2nd Edition; IEC 950: 1991+A1, A2, A3/ EN 60950: 1992+A1, A2, A3
emissions standards	FCC Part 15 Class A; CISPR-22: 1993/ EN55022: 1994–Class A; VCCI Class A
immunity standards	EN50082-1: 1992 Generic Immunity ESD: IEC 801-2: 1991/ prEN55024-2: 1992, 4kV CD, 8kV AD Radiated Immunity: IEC 801-3: 1984/ prEN55024-3: 1991, 3 V/m EFT/Burst: IEC 801-4: 1988/ prEN55024-4: 1992, 0.5 kV signal lines, 1.0 kV power line

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