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Macintosh: Description of AT&T Datakit Configuration

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Article Change History

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- To include information on AT&T's enhanced Datakit

TOPIC -----

Can I connect a Macintosh to Datakit or the "commercial" offering of Datakit, AT&T's Information Systems Network, ISN.

DISCUSSION -----

The AT&T Datakit VCS (Virtual Circuit Switch) is an architecture for high-speed data communications between computers and terminals of different types. It supports both terminal-to-computer and computer-to-computer communication. Functionally, it uses an internal packet switch capable of switching 44,000 packets per second.

A virtual circuit is a sequence of packets joined together by a "switch" module (switch circuit pack) to form a transmission path between host computers and network destinations (host, personal computers, modem pools, etc). After a connection (circuit) is made, subscribers can talk to only that destination until they make an explicit request to terminate or suspend the connection. The physical link can be one of four different types:

- RS-232C sync or async
- Parallel flat band cable, optical fiber, or two 50-wire cables using balanced transmission for multiple host interfaces
- Optical fiber trunk links
- RS-232C or V.35 connection for a DDS or T1 trunk

Apple supports the RS-232C interface in a wide variety of terminal emulation modes and can provide a solution for replacement of a "dumb"

terminal with a computer connected to the Datakit VCS for the host connection.

The fundamental architecture for Datakit and ISN is the same. Both use centralized short-bus architecture to implement local-area networking. Both use AT&T's contention mechanism known as "perfect scheduling" to packetize transmissions on a time-slotted bus. This contention scheme provides for no destructive collision or periods of idleness on the bus, in contrast to distributed bus and ring architectures.

The basic scheme of the LAN is to connect devices, via copper or fiber, to interface modules residing in a centralized cabinet. This cabinet houses the control circuitry necessary to assemble, address, route, establish circuit take-up/take-down, synchronize, disassemble, and so on. Control cards, along with interface cards for devices and circuits, meet with the backplane of the cabinet to form the "short-bus." Imagine a star configuration meeting at the center to create a bus.

The backplane bus is short. In ISN, it is about 5 meters, running at 8.64Mbps (48,000 packets/second, each packet 180 bits). Propagation delay is minimal along the bus (less than 2 percent of the first bit of transmission is exposed before the receiving device sees it).

Datakit uses a 2-bus scheme, while ISN uses a 3-bus scheme. One packet period prior to the transmission of data, ISN resolves contention on the third bus. Packet headers contain a module number related to the sending device. This, along with a priority code, comprises the packet contention code. Basically, the module having the highest contention code wins access to the bus for any particular time slot on that bus, resulting in perfect scheduling.

It's best to think of ISN as a phone system. Everyone has potential access to everyone else via the "switching" capabilities of ISN. PC# 1 needs to communicate with Host A, so PC# 1 breaks into an ISN session, "dials" (literally or by keyboard) the host, and is connected via routing mechanisms of the ISN.

ISN provides a large assortment of interface modules for connecting trunks and data equipment. ISN are modular in nature and can grow to several thousand devices, using concentrators and inter-networked packet controllers.

Some of the interface modules include:

- Async Interface Modules (AIMs)
- StarLan Interface Modules (SLIMs)
- Fiber Interface Modules (FIMs)
- Ethernet Interface Modules (EIMs)
- Trunk Interface Modules (TIMs)
- 3270 Terminal Switching
- Synchronous Transport (for Cluster Controller interfacing)

It is possible that the Macintosh can interface with ISN (Datakit) as an

asynchronous terminal connected to an AIM board. The AIM board is looking for an 8-pin modular tipped connect, RS232. Synchronously, there may be problems if the ISN had to handle. For example, a Netway 1000 looking at one of its synchronous transport cards. Issues critical to the success of this idea might prove to be the administration of buffers and taking advantage of ISN's flexibility in defining packet sizes. Of course, you need the proper cable and connector spec in both configurations.

Another possibility is using Ethernet Interface Modules to bridge AppleTalk networks that incorporate Ethernet in their design.

AT&T Computer Systems enhanced its Datakit II Virtual Circuit Switch line by adding token ring support, support for AppleTalk networks, and by including access to multiple hosts. Release 2.0 of the product includes the capacity to relay switch, two-way communication between Datakit terminals and X.25 hosts on public and private packet networks. Disk storage was increased to include support of a 40MB SCSI hard disk and tape subsystem. Current users of the product can upgrade. An optional offering is the Maintenance and Redundancy Control Module, an interface which lets you switch the unit from a primary network to a backup.

To locate a vendor's address and phone number, use the vendor name as a search string.

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