

**MICRODATA
NETWORK
PROCESSING
SYSTEMS.**

**MAXIMIZING
NETWORK
CAPABILITIES.**



Microdata

SIMPLY POWERFUL



MICRODATA NETWORK PROCESSING SYSTEMS

THE BENEFITS OF MODULAR DESIGN.

The design of Microdata's innovative systems has been based upon a networking philosophy which assures long term value and adaptability for each product. Specifically, this philosophy incorporates the following concepts:

Complete Network Transparency assures that data flows into and out of the network with no alteration. This eliminates the need to change host software and allows the network to connect with the majority of terminals on the market today.

Virtual-Circuit Switching dynamically utilizes the available bandwidth of a transmission line, provides alternate routing paths for resource sharing, and assures a high level of communications availability.

Error-Controlled Data Transmission allows the user to make good use of idle data frames for error checking by full Automatic Repeat Request (ARQ) data control. This eliminates the probability of undetected errors in data link messages and allows greater use of inexpensive terminals, standard modems, and CPU memory.

Comprehensive Network Management gives total network control from one site anywhere in the network. A log report records traffic levels, network efficiency, and trunk link efforts. An operator's console is used for diagnosis of network faults, improvements of network performance, and monitoring of network operations.

Compatible Modular Hardware means that the current hardware investment is protected and the cost of network growth is contained. The modular advantage is twofold: (1) All units are plug compatible and small systems can be upgraded to larger systems while protecting the initial investment. Common hardware is used extensively. The same modules can be transferred to other systems. (2) The resulting ease of maintenance, reduction of downtime, and in-house maintainability greatly reduce the number of modules that need to be kept on hand.

Diagnostic Test Facility executes built-in self-tests which automatically facilitates identification of a system problem. Microdata's staff of trained service personnel can troubleshoot the user's network processor via a dial-up facility.

SYSTEM FEATURES

Statistical Multiplexing. Dynamic allocation of the bandwidth to an active virtual circuit. Saves modem, multiplexor and leased-line costs.

Multidrop Multiplexing. Saves modem, multiplexor and leased-line costs by allowing several terminal clusters to be supported on the same trunk line with full error control.

Virtual Circuit Switching. Allows a port to communicate with another network port through a dedicated or switched connection.

Host Selection. Allows terminal users in the network to access one or more host computers in the network via menu selection.

Subnetting. Allows the network manager to create subnetworks to select and control the access of various terminals (or groups of terminals) to the host computer(s).

Port Contention. Automatically routes incoming data connections to ports on a first-come, first-served basis. Permits more terminals to be defined on a network than there are physical ports on the host computer(s) provided that all terminals need not be active simultaneously.

Data Transfer Utility. Provides for authorized users to transfer files and/or programs to other computers on the network. If the intended destination file is not present on the receiving system, users have the option of causing an automatic file creation. Users can also request to receive selected information from another computer. The utility transfers data containing variable length records and fields including multi-values and subvalues. System network capabilities and access restrictions are controlled through a global dictionary.

Commands can be used from user terminals to inquire as to the status of the data transfer. A priority interrupt feature is available that allows an important message or file to be transmitted to the destination system as soon as the current transfer completes. Operation is similar to the COPY verb and can be controlled by user application PROCs.

MultiLink Support. Permits the Network Processing system to handle several high-speed trunks connected to other Network Processors or Statistical Multiplexors.

Character Transparency. Data characters are never altered thereby eliminating the need for changes in system or application software. Permits the network to handle a variety of terminals and printers.

Operator's Console. Gives the user total network control from one or more sites anywhere in the network. The operator's console is used for diagnosis of network faults, on-line network reconfiguration, improvement of network performance, and monitoring of network operations.

High Throughput. Each Network Processing System provides up to 400,000 bps effective throughput. A Network Processing System can support as many as 44 high-speed trunks linked to other Network Processors and Statistical Multiplexors. Multinode networks can support traffic from thousands of interactive asynchronous devices.

Common Hardware. Card files, port modules and power supplies are interchangeable with most other Microdata Integrated Network Architecture products. Processing modules can perform a variety of functions. Allows low-cost network expansion, simplified sparing, reduced troubleshooting time and permits units to be field upgraded.

Error-Controlled Trunk-Link Transmission. By using block-check characters in the trunk-link protocol, the probability of an undetected error is extremely small (1×10 to the minus twelfth). Provides data integrity throughout the network.

Variable Block Framing. Trunk-link block length is automatically modified to be proportional to traffic load improving response time, reducing network delays and improving network efficiency.

Network Routing. Microdata Network Processors automatically find available routes from the originating port to any selected destination port. Makes possible the design and implementation of complex networks.

Automatic Baud Rate Detection. Accommodates dial-up and hardwired connections where the speed of the terminal is not known until the call is received. This provides automatic terminal speed detection and simplifies network access.

Inactivity Disconnect. If desired, ports can be configured to disconnect after a user-specified period of inactivity. Definable on a port-by-port basis.

Automatic Logoff. If an inactivity disconnect timer expires on a timed port, special software will logoff the port process on the host system prior to disconnecting. This prevents subsequent network users from accessing other user's files. Auto logoff and inactivity disconnect (if enabled) will not occur if the user application has BREAK key disabled. This prevents incomplete file updates. However, the port will not be reassigned until the logoff is complete.

Trunk Link Protocol Compatibility. The Microdata Network Processing Systems and Microdata Statistical Multiplexors feature the same link protocol and can be used together ensuring network system compatibility.

Alternate Routing. Provides the capability for a Microdata Network Processor to automatically find an alternate route to a destination in the event a trunk is lost or is full.

Link Failure Message. If a link goes down, a message to that effect can be sent to allow users to take corrective action if necessary.

Network Console Commands and Software Menus. The network manager receives status information at the operator's console (which also function as a normal terminal attached to the network) and can reconfigure or issue commands. Allows network manager to change the network configuration, assist users with difficulties and isolate network faults quickly. The console can be defined as located anywhere in the network.

Network Control Security. Prevents unauthorized use of operator's console via password response.

Unattended Operation. Network processors perform their functions without human intervention and can be monitored from the network console(s).

Automatic Network System Load. Network Processing System software is automatically loaded on power-up, the network becomes operative and is automatically set-up to its last configuration. Users may also specify that one or more port connections should remain disabled until manually enabled.

Built-in Diagnostics with Alphanumeric Display. Processing modules perform self-diagnostics on hardware components at start-up time. Information is displayed on an alphanumeric display on each processing module.

Remote Diagnostic Access. If so configured, there is a dial-up capability to access each Microdata Network Processing system to monitor all operational and diagnostic information. Permits remote fault isolation and facilitates problem solving by either the customer or Microdata support personnel.

Customized Configuration. Allows the network to be configured to the specific needs of the user. This capability extends down to the individual subnets, terminal/hosts, and host/host port connections which can be defined as needed and can be changed by the network manager.

Character Compression. Network processor compresses repeated characters which increases link throughput and improves performance of networks sending volumes of tabular data.

Device-Speed Transparency. Depending on the equipment configuration, mismatched speeds can be accommodated.

Dynamic Buffer Allocation. Allows substantially better use of buffer space with resultant greater capacity, permits the network to handle a broad mix of terminals and terminal speeds, as well as respond dynamically to network load requirements.



A RANGE OF NETWORKING CAPABILITIES.

The Microdata Model 3355 Network Processing System was designed to meet the needs of small, medium to large multinode networks using high-performance state-of-the-art technology. When the Model 3355 is operating, users have access to a broad range of capabilities including multiple host selection, port sharing, automatic logoff, alternate routing, file transfers and on-line reconfiguration. With the 3355, users have virtually unlimited growth potential. It can communicate with other 3355s or serve as a master processor to Microdata Statistical Multiplexors.

Since the 3355 Network Processing System is designed around the Integrated Network Architecture, it can be easily upgraded to accommodate changed environments or expanded network configurations without losing the investment in current hardware and software.

TECHNICAL SPECIFICATIONS.

• Construction

Rack-mountable card files contain one adapter module plus slots for one to eight communications modules. A model 3355 Network Processing System can contain up to six card files in the four foot enclosure or eight card files in the 6½ foot cabinet. Diskette program load unit is included in the first card file.

• Communications modules can be either:

- Microprocessor-based **Processing Modules** which control the system, perform diagnostic testing and monitor the status of the system
- Dual-port Asynchronous Modules which accommodate connection of RS-232 devices (terminals, serial printers and computer ports)

• Connection Capabilities

64 slots for communications modules in full expanded unit (eight card files). Slots can support either user equipment (two ports per slot), or one or two multiplexed trunk links.

• Trunk Links

Synchronous, externally clocked to 19,000 bps maximum of 22 or 9600 bps, maximum of 44.

• User Equipment Ports

Asynchronous port expansion in two-port modules from two to 124 maximum. All industry-standard asynchronous (start/stop) serial data formats supported (5-8 bit, plus parity) using EIA RS-232C interface. Accommodates bit rates of 110, 300, 600, 1200, 2400, 4800 and 9600 bps. Autobaud detection, if enabled for that port, will automatically adjust baud rate for equipment either Class 1 (110 to 1200 BPS) or Class 2 (300 to 9600 BPS).

• Indicators

Three LEDs per adaptor module. LED universal indicator for each port on dual port module. Four character alphanumeric display and one LED on each processing module.

• Power Requirements

115 VAC, 60 Hz, 120 watts per card file.

• Environment

Ambient temperature: 40-90 degrees F. Humidity: up to 95% (non condensing). Heat dissipation: 410 BTUs card file.

• Enclosure Dimensions

4-foot Enclosure

Height	48 in.	(122 cm)
Width	22 in.	(56 cm)
Depth	25 in.	(63.5 cm)

6.5 foot Enclosure

Height	78 in.	(198 cm)
Width	22 in.	(56 cm)
Depth	25 in.	(62.5 cm)

Card File Dimensions

Height	7 in.	(18 cm)
Width	19 in.	(48 cm)
Depth	11 in.	(28 cm)

Network Diagrams

Terminal



Serial Printer



Asynchronous Direct Connection

Asynchronous Remote Connection

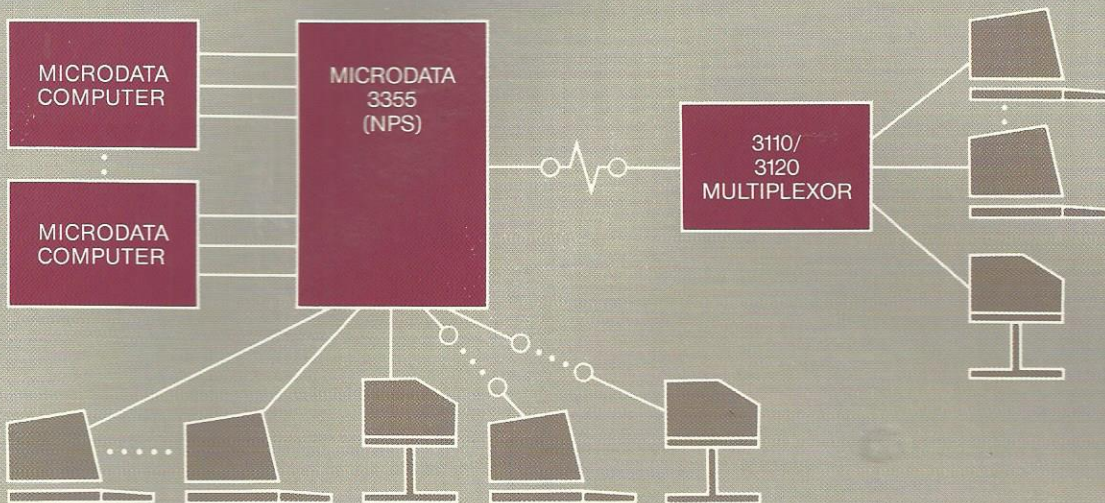
Modem

Synchronous Trunk Link

MULTIPLE LOCAL HOST NETWORK

In this arrangement, one or more locally located Microdata computer systems are accessible from local and remotely located terminals and printers using a single Network Processing System (NPS). Terminal users (if so authorized)

can select which system to access and can initiate data transfers between systems. Automatic baud rate detection can be activated for the remote dial-up terminal ports to accommodate terminals with different speed characteristics. System selection menu can contain a subset of systems which can be configured differently on a port-by-port basis.

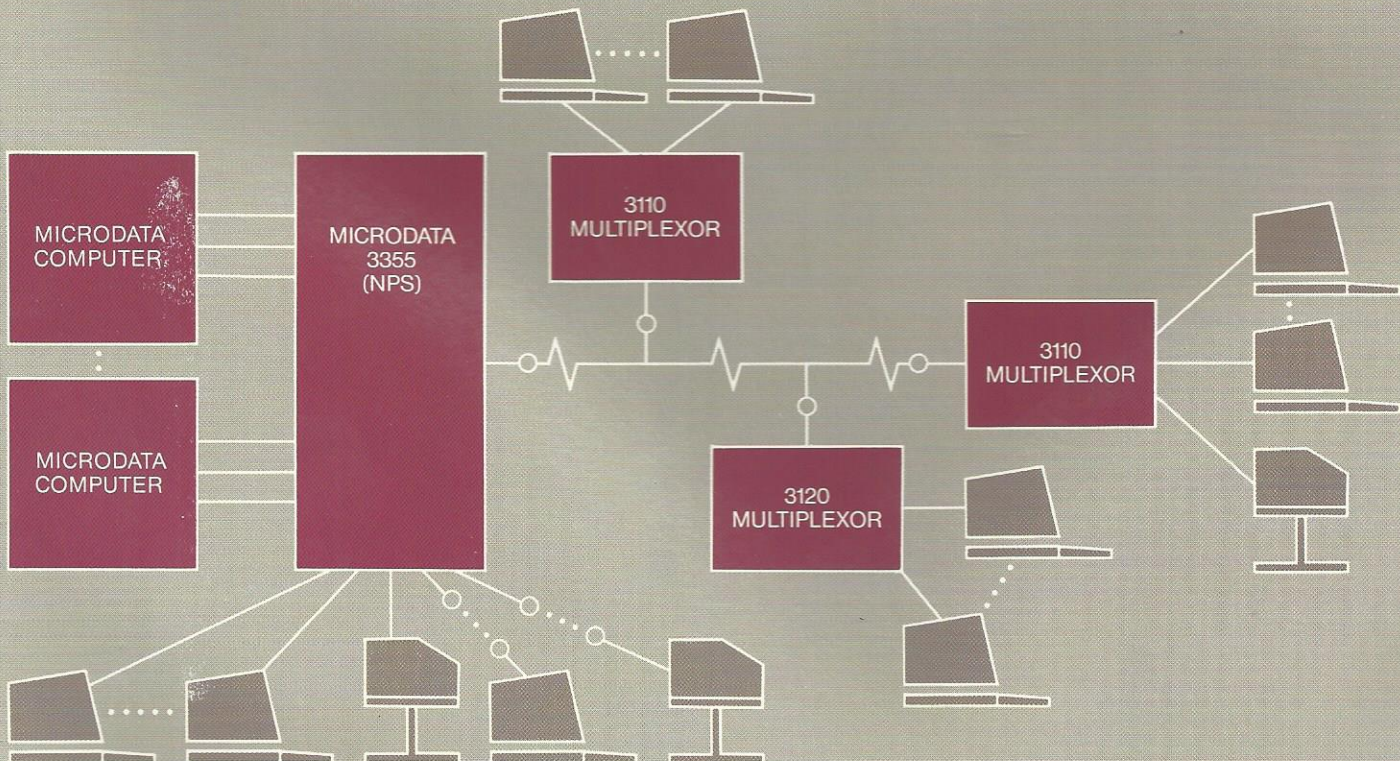


MULTIPLE LOCAL NETWORK WITH MULTIDROP MULTIPLEXING

This example shows an integrated network system at work, with multiple Microdata Statistical Multiplexors sharing a single multidrop

trunk link connected to a Network Processing System (NPS). The NPS can easily support additional multidrop trunk links.

This diagram shows representative networks that can be accomplished. Terminal users in a multidrop multiplexing network enjoy the same facilities as in a stand-alone network.



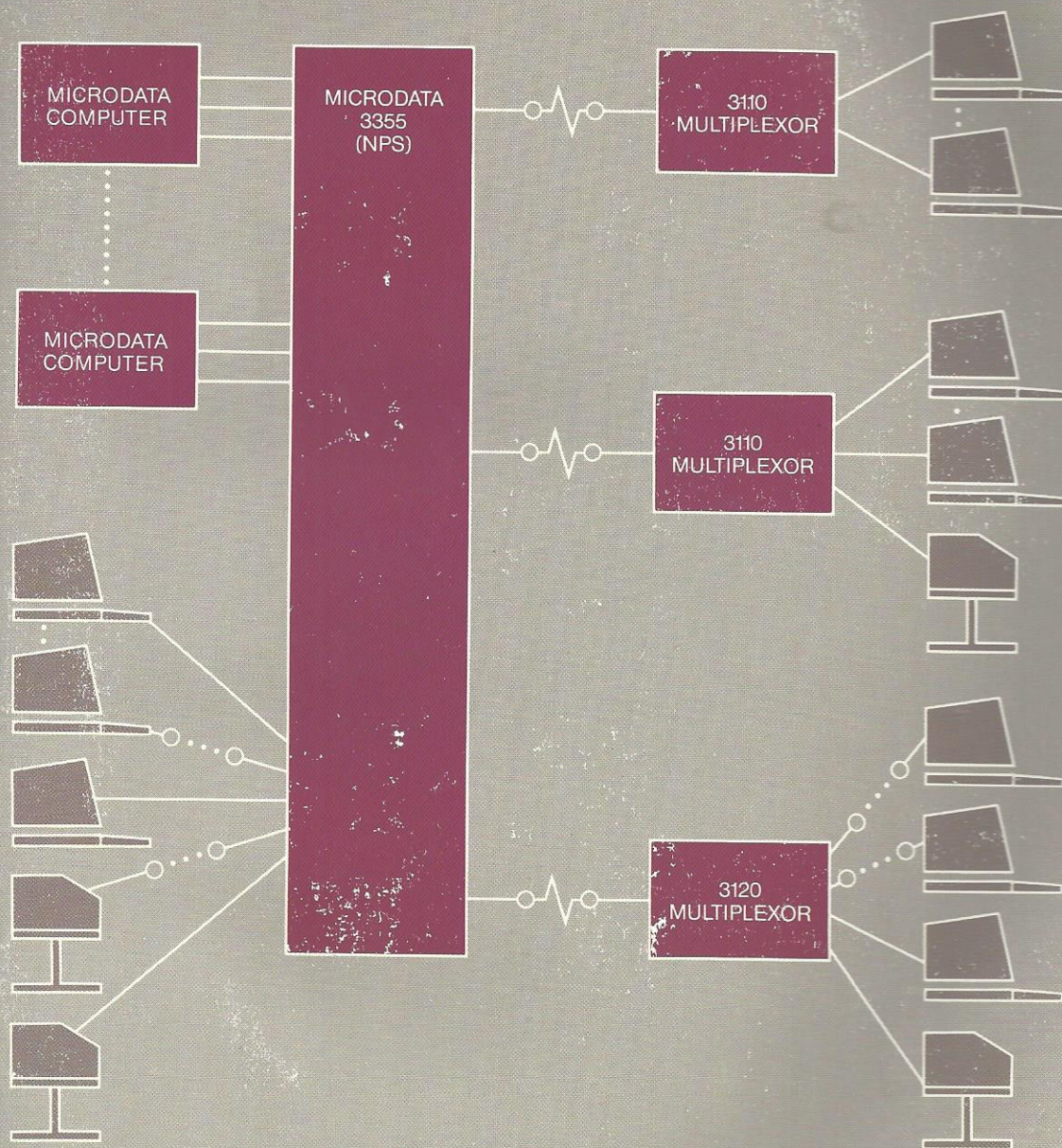
MULTIPLE LOCAL HOST NETWORK WITH MULTIPLE TRUNK LINKS

When response requirements at a terminal cluster are too high for multidrop multiplexing, a dedicated slave network processor and trunk link can be used. This figure shows a Microdata Network Processing System (NPS) as the master network processor connecting Microdata Statistical Multiplexors using separate trunk links. Up to 44 trunk links can be supported.

This example also shows some remote terminals connected by dial-up lines to a statistical

multiplexor using autobaud. A local phone call could place such terminals on the network to systems in a distant city.

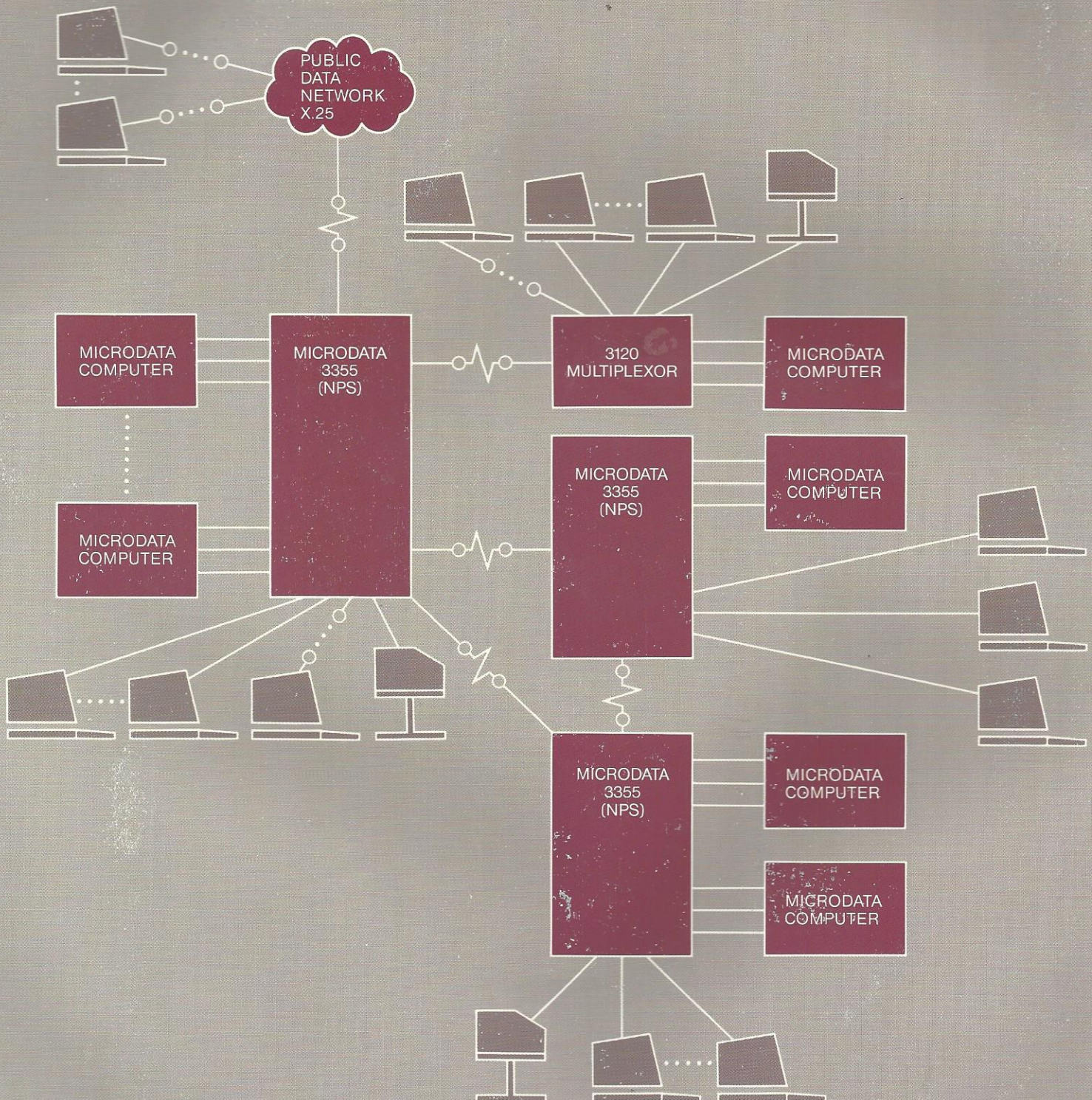
Terminal users anywhere in the network can access any of the network's resources if allowed by the network manager. The Microdata NPS provides extensive tools for network management and control. Its network console provides management with performance statistics that are extremely helpful for planning network expansion, troubleshooting, and assisting terminal users within the network.



FULL-FUNCTION MULTINODE NETWORK

In a full-function network configuration, multiple network processors extend service to dispersed terminal clusters and host computers. Microdata Network Processing Systems give

many high-performance features which are represented in the network configuration. Access can also be provided via an X.25 link. This arrangement illustrates the power of an integrated network system using Microdata Network Processing Systems (NPS) to control access to multiple Microdata computers.



THE MICRODATA SUPPORT SYSTEM.

Each system in the Microdata communications product line is continually supported by the company's extensive sales and service organization as well as Microdata's U.S. network of direct sales offices and dealers.

Microdata is a subsidiary of the McDonnell Douglas Corporation and is a major constituent of the McDonnell Douglas Information Systems Group. This group positions Microdata in the forefront of information processing technology and places the company in a position to pass the latest innovations on to its customers. Microdata customers benefit in two ways — state-of-the-art technology and the fiscal strength of the McDonnell Douglas Corporation.

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