

HEWLETT-PACKARD

HP AdvanceNet for Regional Sales and Service

March 1988

Solution Guide

A complete description of
Hewlett-Packard's solution for
regional sales and service networks

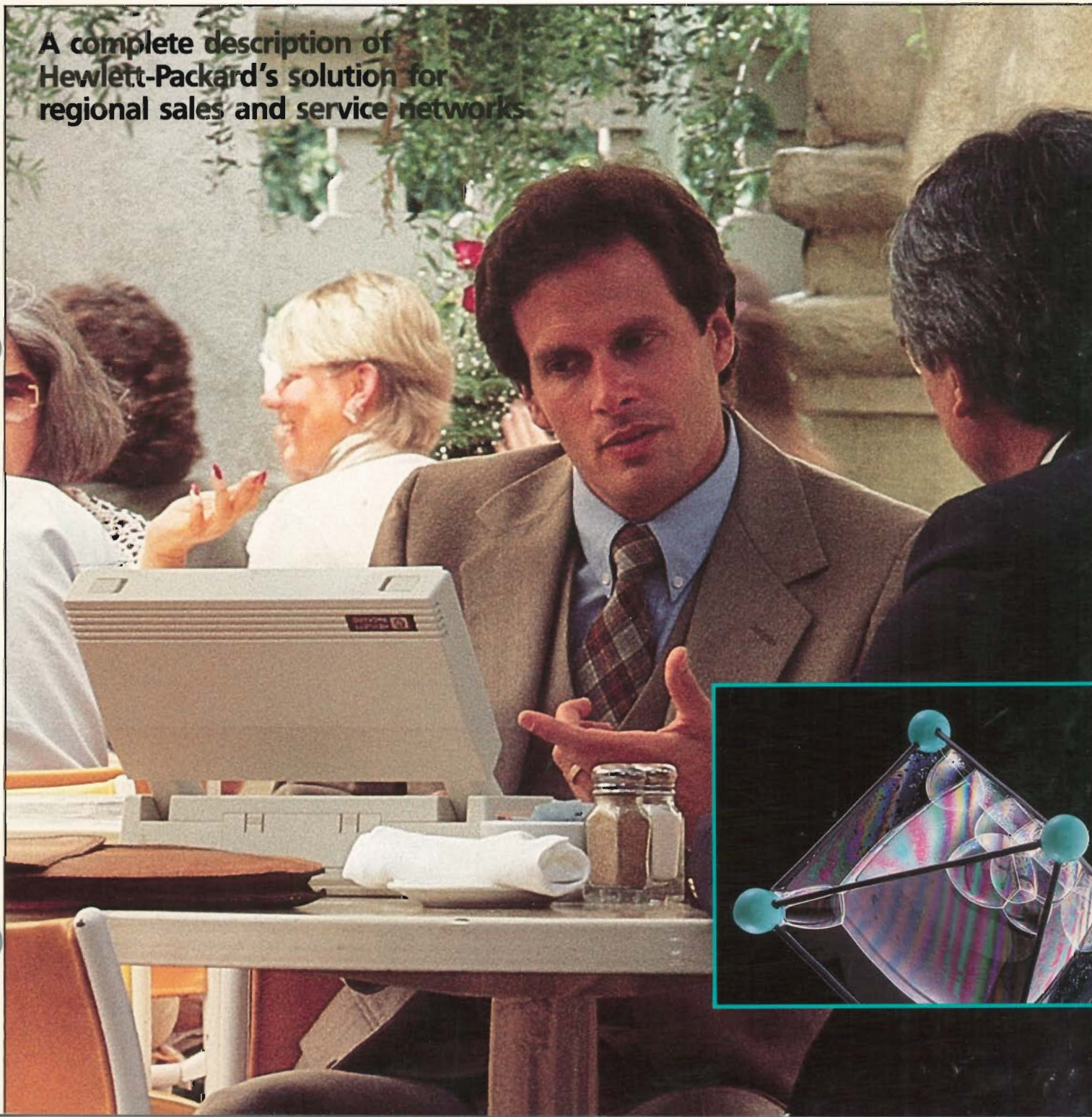


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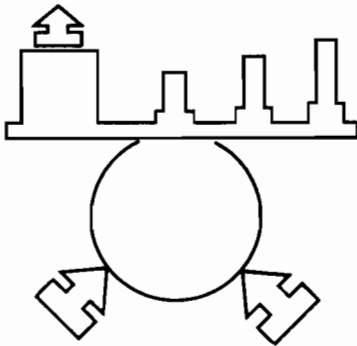


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Preface



This solution guide contains network descriptions for the HP AdvanceNet Regional Sales and Service network solution.

The guide includes information on HP products that can be used with HP systems or tied into other vendors' data processing and office automation equipment.

HP AdvanceNet offers a broad range of alternatives for both local and remote communications. HP's networking products are easy to install and maintain, even as the network grows in size and complexity. HP AdvanceNet is also based on a firm commitment to industry standards, such as the International Standards Organization's Open Systems Interconnection (OSI) reference model.

This commitment ensures lasting value for hardware and software, and facilitates communication with other vendors' standards-based networks. HP also supports multivendor communications by offering products that are compatible with other vendors' proprietary networks, such as those of IBM and DEC.

The Regional Sales and Service network solution is one of five HP solutions designed to meet networking needs within different business environments; the others are for the Business Office, Computer Integrated Manufacturing, Engineering and Company-wide Networks.

Every business environment has its own unique needs, characteristics and computing automation programs. Recognizing this, HP has created a way to tailor network technologies to help users meet these needs and implement their programs.

Within a computing automation program, different projects are defined that make up a phased and successful implementation. To facilitate such projects, HP has created networking modules; each solution, and its guide, is thus divided into several modules.

A module consists of products grouped together to address a specific communications problem. Examples within the Regional Sales and Service solution include the Branch Office and Regional Network modules.

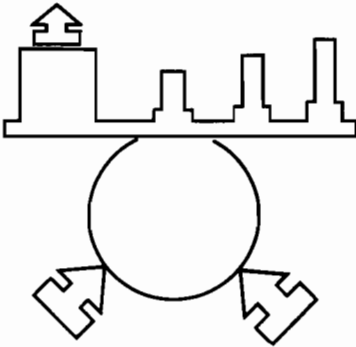
Subdividing solutions into modules ensures that when implementation proceeds one project at a time, integration of the projects later on will be easy. Using this approach, for example, a company can specify, design and implement its computer room as one project, and devise a system for end-user communication as another project; integrating these steps creates a total solution.

Within a module, there are often several scenarios that look at potential or common variations of the problem addressed. Each scenario in turn might encompass several alternatives, depending on the size of the network and its load.

In addition, each solution guide includes a Network Support module, which describes the services HP offers to help customers tailor their networks to their exact needs. Planning and design, implementation, maintenance and education are among these services.

Product data sheets for the five HP AdvanceNet solutions, which provide detailed information on individual products and are sources of configuration and ordering information, are available in the 1988 HP AdvanceNet Specification Guide. Your HP sales representative or local HP sales office can provide copies at your request.

Introduction



Many companies must locate facilities at different geographical locations. This can happen for economic or historical reasons, or for other business reasons, such as the need to locate the people who sell, deliver, install and support your products near your customers, not back at company headquarters. Regardless of whether your company produces goods or services, this geographical dispersion can become a business reality.

Such dispersion poses a unique challenge to managing and communicating, especially if your organization is spread across a region or the entire country. Whether you call them branch offices, parts depots, claims offices, sales offices or anything else, you need a regional network to transmit orders, provide electronic mail and keep information flowing to and from these sites.

The Sales and Service organization often plays a key role in creating a competitive advantage for your company. Automating your sales and service personnel with computer-based tools enables them to reduce time lost on administrative tasks. Instead, this time can be spent increasing sales and reducing customer downtime. Tools to generate quotes automatically, find technical repair information, generate order status or create customer mailings need to be connected to your company's computer system to be effective. And these connections must be cost-effective and cover a wide geographical area, enabling your people to access the latest accurate information and reduce costly mistakes.

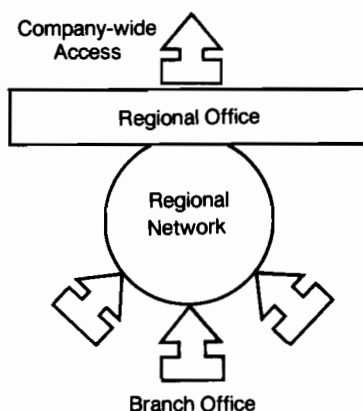
Providing the communication connections and services to support geographically dispersed organizations is the function of the Regional Sales and Service network.

There are several important considerations in designing your regional network. You must look at how it relates to your company-wide backbone network. If, for instance, the backbone is a private X.25, the regional network may merely be an extension of this network.

If you have a leased line or SNA backbone network (often with relatively few nodes), the network may not be well suited to handle a large number of branch offices spread over a wide geographical area. In this case, you should create regional networks. Whether the branch offices are providing maintenance services, distribution or sales support, the communications needs of these branch offices are different from those met by this type of backbone network. You can connect these branch offices together in a subnetwork, and then connect these subnetworks into the company-wide network at a central point, such as the regional or company headquarters.

If your company doesn't have a company-wide backbone, the alternatives described within this regional network solution may be all it will take to meet your company's needs.

Hewlett-Packard is a full-line supplier of computing and networking equipment that enables companies to solve business problems. This guide contains information and technical specifications on products Hewlett-Packard makes to enable you to tie your sales and service automation tools into an effective network.



The solution guide is made up of modules, which bring together a logical grouping of products that address a specific communications problem.

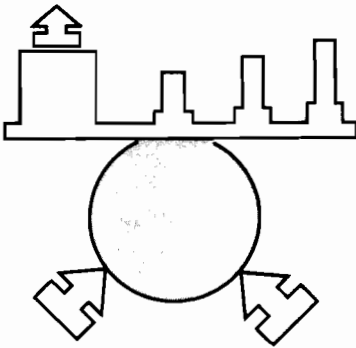
The Regional Sales and Service network solution* includes five modules:

- 1) The Regional Network module includes products needed to connect your branch offices to their regional headquarters office in the most cost-effective way. Choosing the best alternative for your regional network can optimize performance while reducing costs.
- 2) The Branch Office module contains products needed to provide communications within a branch office and to connect the branch office to a regional network. This module outlines choices based on the size of the branch office, from a single person on the road with a portable computer to a large branch office with its own data center and hundreds of users.
- 3) The Company-wide Access module provides products to connect computers at a regional headquarters to computers throughout your company, allowing for consolidation of operating information, sharing of company data and access to electronic mail. Using the products described in this module at the regional headquarters, all your branch offices served by this regional office also have access to the company-wide network.
- 4) The Network Management Module provides the ability to monitor, diagnose and control each component of the network.
- 5) The Network Support module includes products and services with which HP designs, implements and starts up your network.

**For a description of HP's networking solution within the regional office or at large branch offices, please refer to the Business Office Network Solution Guide.*

Regional Network Module

Introduction — Why a Regional Network?

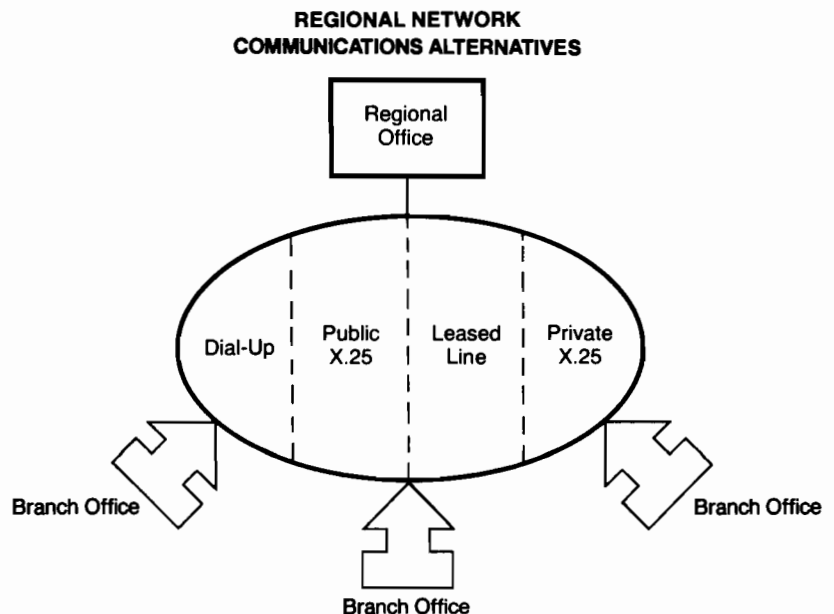


In most companies, sales and service functions often take place away from corporate headquarters in regional and branch offices. The regional office is the focal point for sales or service activities and typically connects to several branch offices. A branch office can be as simple as a single field salesperson with a portable PC or the branch office can be large, employing hundreds of people who work together to perform sales, service and administration.

The branch offices will need to communicate to other branch offices and to the regional office through a regional network. A regional network allows the remote sites to perform a variety of applications such as the on-line interactive transfer of sales order information and customer data.

If a company is small and has no other network in place, a regional network, using a variety of communications alternatives, can be designed to meet the organizational requirements.

If the regional office already communicates to the corporate headquarters through an SNA backbone network, it is still desirable to set up an independent regional subnet. The location of the links in a large SNA network is often different than that required for regional-to-branch communication. A regional subnet should provide the flexibility to communicate to the regional office plus peer-to-peer communications with other branch offices for electronic mail and information sharing. The applications are also different between an SNA backbone network and a regional network. The large SNA backbone network generally is used for the batch transfer of accounting information, while the regional network is used for on-line interactive customer transactions. It is important to tailor the network to the application and provide the right level of flexibility.



If, however, a company already operates a corporate private X.25 network, this may be flexible enough to meet the needs of both corporate and regional network usage. The regional network will most likely be a "logical" network and simply an extension of the existing private X.25 backbone.

The diagram illustrates a typical sales and service regional environment with the following network alternatives:

- Dial-Up
- Public X.25
- Leased Lines
- Private X.25

Many companies combine these alternatives to meet their organizational needs. Selecting the appropriate network type depends on your company's requirements. No single alternative is better than any other. Each has advantages in specific situations. The volume of data that needs to be transferred, the cost of the method, the response time required and whether your application is batch or interactive are all considerations that will impact the network you choose.

Hewlett-Packard's Network Consultants can help you tailor a regional network to your business environment so that the network alternative you select is the most cost-effective and efficient for your needs.

Dial-Up

Dial-up is a point-to-point alternative best suited for transferring data in batch mode. It is most appropriate when quick response time is not needed. Typical dial-up applications include daily updates to a sales order data base or daily transfer of accounting information.

Functional Description

The dial-up solution consists of two pieces; hardware and software. The hardware is a modem required at each end of the dial-up line and an interface card that resides in the HP 3000. The software resides in the HP 3000 or PC that is connected to the modem.

The dial-up access method in the regional network environment may be synchronous or asynchronous. Synchronous communication provides a high-speed dial-up connection for system-to-system communication. Asynchronous transmission provides a lower cost, lower performance solution. Asynchronous dial-up is recommended for direct connect terminals and PCs.

Features and Benefits

Features

- 1) Common set of user-friendly networking capabilities
- 2) Gateway to other types of networks
- 3) Half-duplex protocol support
- 4) Full-duplex protocol support
- 5) Auto-dial support
- 6) Point-to-point dial with modem

Benefits

- 1) Saves time and money by reducing training and skill level required.
- 2) Provides easy access to LAN and point-to-point networks, thus increasing connectivity to all networks within the company.
- 3) Provides backwards compatibility, thereby saving you money by allowing you to keep existing equipment.
- 4) Provides high-performance connectivity to OSI standards protocol and reduces line transmission cost.
- 5) Saves you money by not requiring extra personnel to perform network functions.
- 6) Provides flexible connectivity by giving you access to the network from any remote location.

Product Reference List

Async

For HP 3000

HP 32003A Asynchronous HP SERIAL Network Link
HP 32344A NS3000/V Network Services
HP 24597A HP Terminal Program

For Touchscreen and Vectra

HP 50910A HP Serial Network User Link for HP Touchscreen PCs
HP 68333F AdvanceLink
HP 50923F Network Services — User Services/Vectra PC
HP 50925F PC Server Software/Vectra PC
HP 50929F LAN PC Configuration & Diagnostics Package/Vectra PC
HP 50926F StarLAN Vectra PC Link

Sync

For HP 3000

HP 30284A,
HP 30285A NS Point-to-Point 3000/V Network Link
HP 32344A NS3000/V Network Services

For HP Vectra PC and IBM PC/XT/AT

HP 68333F AdvanceLink

Public X.25

For easy access to multiple systems, public X.25 can be an appropriate alternative. Branch offices that have both batch and interactive requirements may be suited to a public X.25 network. Public X.25 is appropriate for regional networks where there are many widely dispersed branch offices. Public X.25 is also ideal in companies where branch office to branch office (peer-to-peer) communications are important. This alternative has wide international coverage.

Economically, the cost of a public X.25 network is a fixed monthly fee with a traffic volume charge. The initial hardware investment is relatively low. Public X.25 is economical for low to medium volume requirements.

Functional Description

A public X.25 solution requires an X.25 link and software on the computer to communicate with the public data network. Line concentrators can be used to concentrate several lines into one public X.25 access line.

Hewlett-Packard certifies its equipment will operate over all major public X.25 networks throughout the world. Please consult your local HP representative for the most current listing of certified networks.

Features and Benefits

Features	Benefits
1) Transparent access to multiple systems	1) Provides flexibility while increasing connectivity.
2) Network control by the X.25 vendor	2) Reduces operating costs by simplifying your network management requirements.
3) Common set of user-friendly networking tools	3) Saves time and money by reducing training and skill level required.
4) Terminal Support	4) Provides terminal connectivity to remote computer systems.
5) Public X.25 available internationally	5) Allows you to expand your network worldwide, thereby increasing connectivity.

Product Reference List

Hardware

HP 2334A Plus	X.25 Multiplexer
HP 32065A	CODEX 2620 Data Modem
HP 32066A	CODEX 2640 Data Modem
HP 32067A	CODEX 2660 Data Modem
HP 32068A	CODEX 2680 Data Modem

Software

For HP 3000

HP 32344A	NS3000/V Network Services
HP 24405A	NS X.25 3000/V Network Link

For HP Vectra PC and IBM PC/XT/AT

HP 68333F	AdvanceLink
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Referenced Non-HP Products

HP 30290A	X.25 Line Concentrator: Dynapac Multiswitch X.25 Model 8 (for U.S. only)
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Leased Line

Leased lines are a point-to-point alternative best suited to access branch offices where high availability and interactive communication is a requirement. It is most appropriate when the data transfer volume is high and time-critical, and quick response times are desired.

Leased lines have fixed traffic routes and are well suited to environments that have large data volumes with a small number of branch offices. These branch offices are generally large. Because the lines are fixed, companies can perform their own network management on the links.

Sample leased-line applications include on-line checking of sales order availability from the branch office to the regional office. Batch data transfer such as inventory transfers can also be handled with this alternative.

Economically, leased lines have a fixed monthly communications charge and require a relatively low initial hardware investment. Leased lines are appropriate for large traffic volumes.

Functional Description

Leased lines use synchronous transmission, and require hardware and software. The hardware is a modem at each end of the leased line. The software, which provides an interface to the link, resides on each system.

Features and Benefits

Features	Benefits
1) Dedicated lines	1) Provides high reliability because connection is always accessible.
2) Network management capability	2) Allows you to control the network management of the links.
3) Common set of networking capabilities	3) Saves time and money by reducing training and skill level required.
4) Gateway to other types of networks	4) Provides easy access to LAN and point-to-point networks, thus increasing connectivity.
5) Half-duplex protocol support	5) Provides backwards compatibility, thereby saving you money by allowing you to keep existing equipment.
6) Full-duplex protocol support	6) Provides high-performance connectivity to OSI standard protocol and reduces line transmission cost.

Product Reference List

Async

HP 32003A Asynchronous HP SERIAL Network Link

HP 32344A NS 3000/V Network Services

For Touchscreen and Vectra

HP 50910A HP Serial Network User Link for HP Touchscreen PCs

HP 68333F AdvanceLink

Sync

Hardware

HP 32065A CODEX 2620 Data Modem

HP 32066A CODEX 2640 Data Modem

HP 32067A CODEX 2660 Data Modem

HP 32068A CODEX 2680 Data Modem

For HP 3000

HP 30284A,

HP 30285A NS Point-to-Point Network Link

HP 32344A NS 3000/V Network Services

HP 68333F AdvanceLink

Network Management Tools

HP 4952A Line Analyzer

HP 4951C Portable Protocol Analyzer

HP 4953B High-Speed Protocol Analyzer

HP 4955A Basic Programmable Protocol Analyzer

Private X.25

A private X.25 solution has all the advantages of a public X.25 network plus more. In a private X.25 environment, the user has ownership and control over the network, thus maximizing the ability to manage network resources and control the security access. HP's Private X.25 Network provides the tools to effectively manage this important part of your company's overall communications facilities.

Economically, private X.25 is often cost-effective for high to medium traffic volumes that require high connectivity between different geographic locations. It is appropriate when there are many branch offices. This alternative requires an initial equipment investment as well as a monthly communication charge.

Features and Benefits

Features	Benefits
1) Individually tailored network solution	1) Reduces line costs and allows you to build in redundancy only where needed.
2) Transparent access across multiple systems	2) Increases connectivity and reduces costs in training and operator skill level required.
3) Terminal support	3) Provides terminal connectivity to remote computer systems.
4) Dedicated Networks	4) Provides greater control and higher reliability of your network resources.
5) Network Management	5) Allows you more control to manage your resources for greater security.

Product Reference List

Large Networks

HP X.25 Private Packet Network

HP X.25 Switching Nodes — Models 60, 70 and 80

HP X.25 Network Control System — Models 30 and 40

Hardware

HP 2334A Plus	X.25 Multiplexer
HP 32065A	CODEX 2620 Data Modem
HP 32066A	CODEX 2640 Data Modem
HP 32067A	CODEX 2660 Data Modem
HP 32068A	CODEX 2680 Data Modem

Software

HP 32344A	NS 3000/V Network Services
HP 24405A	NS X.25 3000/V Network Link
HP 68333F	AdvanceLink

Network Management Tools

HP X.25 Network Control System — Models 30 and 40	
HP 4952A	Line Analyzer
HP 4951C	Portable Protocol Analyzer
HP 4953B	High-Speed Protocol Analyzer
HP 4955A	Basic Programmable Protocol Analyzer

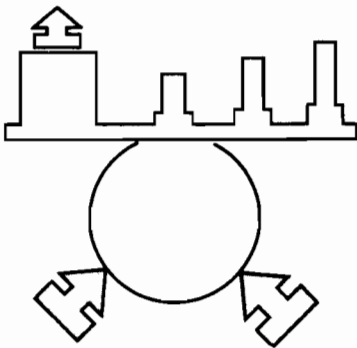
Referenced Non-HP Products

HP 30290A X.25 Line Concentrator Dynapac Multi-Switch X.25 Model 8 (for U.S. only)



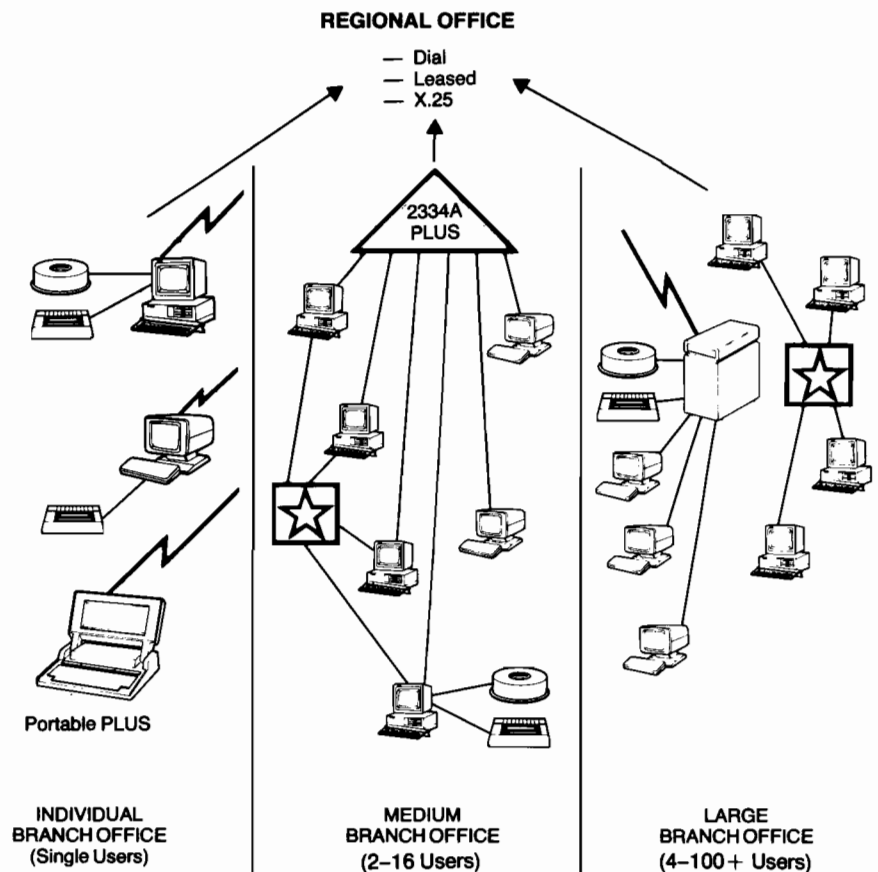
The Branch Office Module

Introduction



The Branch Office network solution addresses the needs of organizations with small to large branch offices. The network must provide cost-effective communication between the regional office and branch offices as well as allowing for easy distribution of applications between these offices. In addition, the network must address the needs of employees working in the field who need to access the office's computing resources. And finally, as the branch offices grow, the network should offer the flexibility and additional capabilities that will be needed.

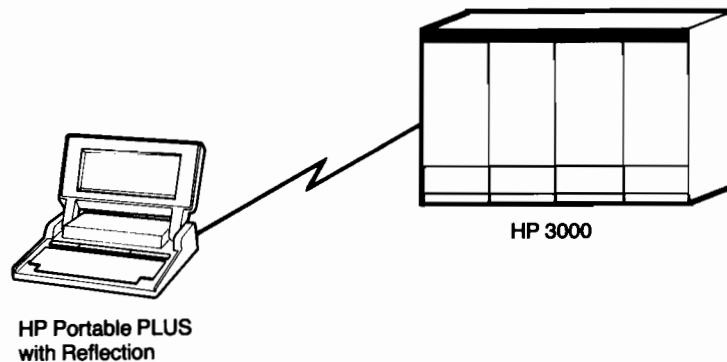
The individual branch office is applicable for single users, whether they spend time on the road using a portable computer or work at a permanent location with a stationary PC or terminal. The medium branch office consists of a cluster of PCs or terminals. The large branch office site has an HP 3000 on site that provides local data processing and communications with the regional office. The large branch office can vary in size from just a few users to over a hundred users. The Branch Office module provides networking alternatives for each of these types of offices.



Alternative 1: The Portable Office

The Portable Office addresses the problems faced by individuals who work outside of their offices a large part of the day. A typical example is the sales or service representative who is frequently at a customer's site. These people have much the same communication needs as other office workers such as electronic mail, access to data and financial analysis. However, they typically need to perform these functions outside of the office environment.

Functional Description



Portable Branch Office

The Portable Office solution consists of the HP Portable PLUS, terminal emulation and electronic mail capabilities.

REFLECTION 1 gives the HP Portable PLUS the capability to emulate a remote HP 2932A terminal over dial-up or leased telephone lines. This product gives the Portable PLUS the capability of running applications that reside on a host CPU along with transferring data to and from the remote HP 3000 computer. HP AdvanceMail provides access to the HP DeskManager electronic mail system from the Portable PLUS, thus enabling these outside workers to both send and receive messages even when not in the office.

Features and Benefits

Features	Benefits
1) Remote terminal emulation	1) Easy-to-use transparent access to branch and regional office HP 3000
2) File transfer to/from remote host HP 3000 computer	2) Ability to submit sales orders directly to the office or easily obtain product information
3) Portable printer print capability	3) Hard copy output is obtained quickly
4) HP DeskManager access	4) Can check incoming messages as well as send mail without going into the office
5) Supported dial-up or leased lines	5) Customer can choose most cost-effective connection
6) Ability to run host applications	6) Remote access and use of computing resources at branch and regional office

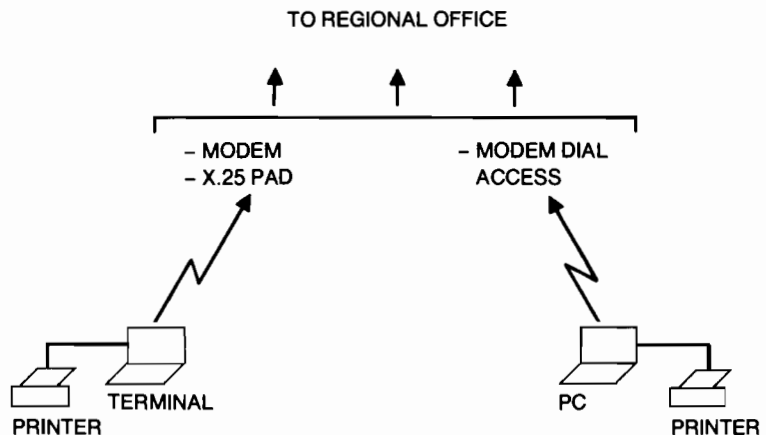
Product Reference List

HP 82863K opt. 400 Reflection 1 Terminal Emulation
HP 82870A opt. 400 AdvanceMail with Reflection 1
HP 82870K opt. 400 AdvanceMail

Alternative 2: The Stationary Office

The stationary alternative of the Individual Branch Office provides the office with a single workstation access to the regional office. The user interface can be a Personal Computer where the primary task is office automation, with interactive or batch type of communications with the regional office. The user interface can also be a terminal where the application is primarily interactive transaction processing.

Functional Description



The Personal Computer solution consists of a terminal emulator, a serial link and an RS-232 port for communications via a modem to the HP 3000. The terminal solution offers communication to the regional office via a modem and telephone line or via a PAD and an X.25 network.

Features and Benefits

Features

- 1) Single users are supported
- 2) Terminal or Personal Computers are supported
- 3) Modem and Pad access
- 4) Local printer support
- 5) Access to HP regional office from remote Personal Computer with serial link

Benefits

- 1) Users can start with small configurations and grow. Many small locations can gain access to information and computing resources.
- 2) Allows for selection of best cost and functionality alternative.
- 3) Minimizes communications cost.
- 4) Document output available in the branch office quickly and at low cost.
- 5) Easy-to-use transparent access to regional office services, resources and information.

Product Reference List

HP 50910A HP SERIAL Network User Link for HP Touchscreen
HP 50910F HP SERIAL Network User Link for HP Vectra

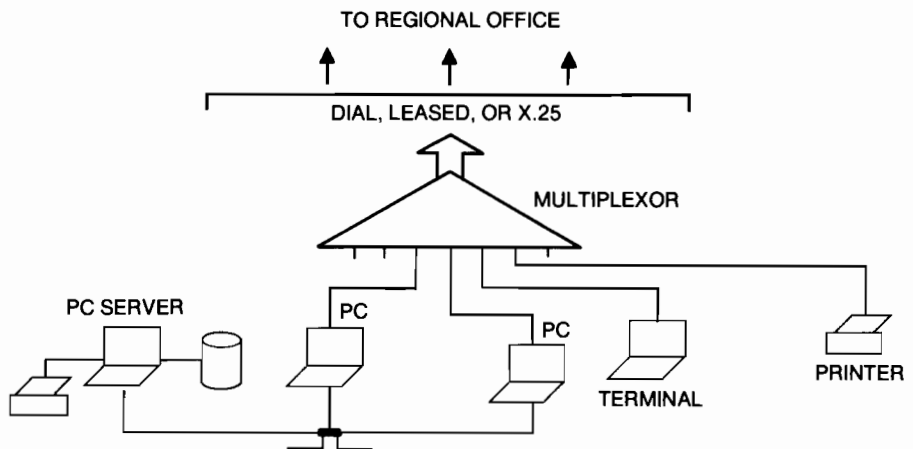
Other Related Products

HP 68333F HP Vectra 1200-baud Internal Modem
HP 24550A HP Vectra 1200-baud Internal Modem
HP 45640A HP Touchscreen 1200-baud Internal Modem

The Medium Branch Office

The Medium Branch Office alternative provides offices with two to sixteen users and a mix of personal computers, and provides terminals and printers access to a regional office. The personal computer network provides the branch office with local peripheral sharing and file sharing. All users can have terminal access to regional office computing power, applications and information.

Functional Description



There is a variety of communications options available. For low-volume traffic and infrequent use, a dial-up line is most cost-effective. Where there is medium to heavy traffic between offices, leased lines or X.25 networks are the most cost-effective. X.25 networks are the preferred solution when multiple regional or branch offices are accessed.

The HP 2334 Multiplexer provides the access for up to 16 devices to a remote HP 3000 via dial-up lines, leased lines or X.25 networks. The personal computer communicates with the HP 3000 using the HP AdvanceLink terminal emulation. The HP StarLAN network provides local PC server access for peripheral and file sharing.

Features and Benefits

Features

- 1) Several devices share the same data communications line.
- 2) Dial-up, leased lines or X.25 can be used.
- 3) Terminal emulation to access regional computer center.
- 4) StarLAN local area network for clusters of Personal Computers.
- 5) Supports a mix of terminals and Personal Computers.
- 6) Local printer or plotter support.

Benefits

- 1) Cost-effective utilization of communications line.
- 2) Allows the customer to choose the most cost-effective connection.
- 3) Access to regional computer resources and information for generating customer quotes and better decision making.
- 4) Cost-effective access to shared peripherals and files.
- 5) Allows for selection of the best cost and functionality alternative.
- 6) Document output from regional office available in branch office and at low cost.

Product Reference List

HP 2334A

HP 2334A Plus X.25 Multiplexer

Other Related Products

HP 68333F

AdvanceLink

HP 50923F

Network Services — User Services/Vectra PC

HP 50925F

PC Server Software/Vectra PC

HP 50926F

StarLAN Vectra PC Link

HP 50929F

LAN PC Configuration & Diagnostics Package/Vectra PC

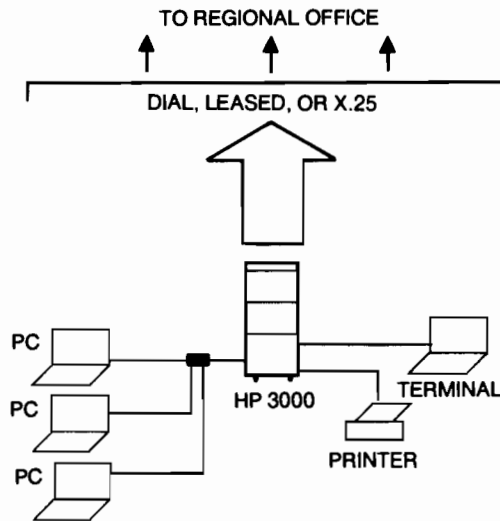
HP 24597A

HP Terminal Program

The Large Branch Office

This alternative provides the Large Branch Office, with as few as four users or up to hundreds of users, local data processing power as well as access to the regional office data processing and information. Applications can be split between regional and branch offices and smoothly grow over time. The PC and 3000 integrated network provides the branch office with local peripheral sharing, file sharing and electronic mail access.

Functional Description



The regional offices can be accessed with the Asynchronous Serial Link, which provides low-cost access for low-volume traffic; or with the NS Point-to-Point link for high-performance access; or the X.25 link, which provides cost-effective access to multiple regional and branch offices.

The large branch office-to-regional office communications consist of HP 3000-to-HP 3000 communications with HP Network Services over the Asynchronous Serial, NS Point-to-Point or X.25 links. The Network Services provide file transfer, remote data base access, remote file access and remote process management; interprocess communication is also offered. For a description of the networking offered within the large branch office site, please see the Business Office Solution Guide.

Features and Benefits

Features

- 1) Range of network links (ASNL, Point-to-Point and X.25)
- 2) Extensive Network Services
- 3) HPDesk access
- 4) Full Business Office Networking

Benefits

- 1) Allows for the selection of the most cost-effective alternative. See Business Office Solution for complete description of networking within the large branch office.
- 2) Ability to cost-effectively split applications between the regional office and the branch office. Resourceful programmatic tools allow high programmer productivity.
- 3) Connection into local and regional wide electronic mail for instant mail at your desk.
- 4) For full list of benefits and explanation, see Business Office Solution.

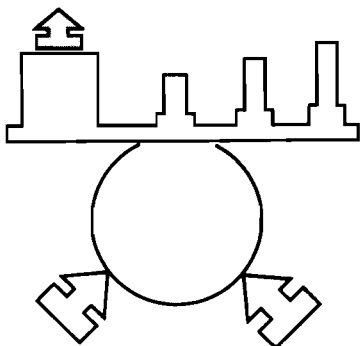
Product Reference List

HP 32003A	Asynchronous SERIAL Network Link
HP 32344A/R	NS 3000/V Network Services
HP 30284A/30285A	NS Point-to-Point Network Link
HP 24405A	NS X.25 3000/V Network Link



Company-wide Access Module

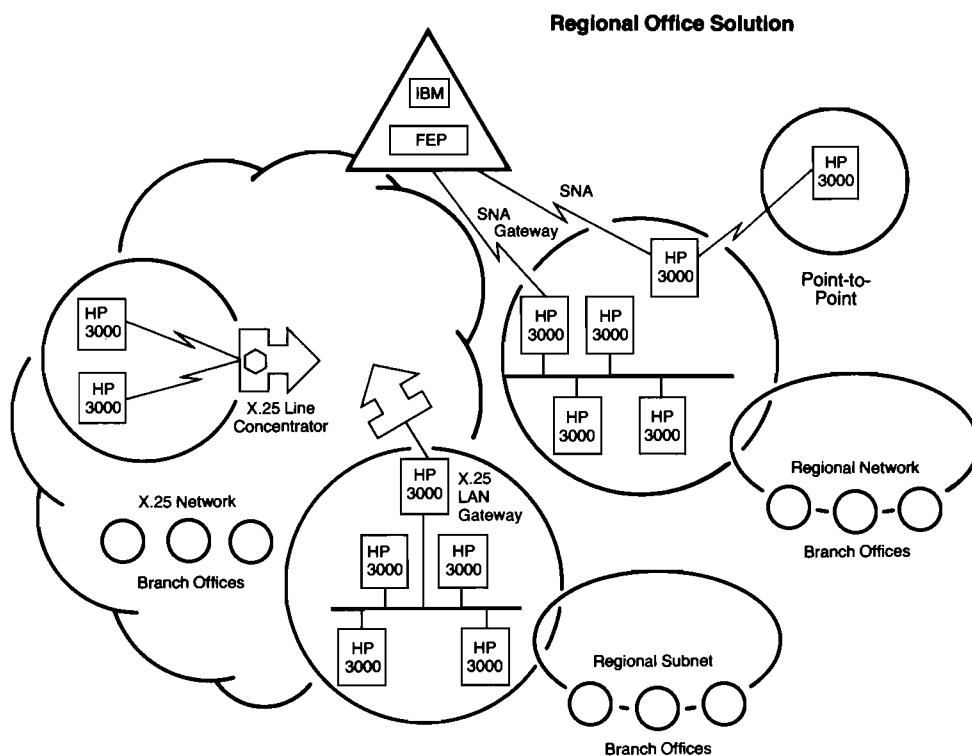
Introduction



In the Regional Sales and Service environment there is often a need to share information with systems located in other remote data centers within the company (e.g., corporate headquarters, manufacturing and engineering sites and other business office sites). These data exchange capabilities are needed for end users who access remote applications and data bases, and for software processes running over multiple systems. There may also be a need for HP 3000 users to communicate with an IBM mainframe at corporate headquarters to update a data base, access an IBM 3270 application or exchange electronic mail with corporate IBM users.

The Company-wide Access module describes the way HP systems can interconnect with remote HP or IBM systems across the backbone network. The alternatives depend upon which type of backbone network is installed as the company-wide network.

For access to either a public or private X.25 network, HP offers two types of communications. HP 3000 computers can communicate with remote HP data centers using either 1) direct X.25 system access or 2) X.25 system access through a LAN gateway. If it is necessary for HP computers to communicate with IBM systems, then the alternatives are 1) an HP 3000 X.25 to SNA Gateway or 2) SNA/X.25 Protocol Conversion.



If access to SNA is desired in order to communicate between HP and IBM computers, the options are 1) an SNA Gateway to IBM or 2) standalone SNA access from HP 3000 to IBM.

When the company-wide network is based entirely on point-to-point connections, the only option for system access from the business office to another data center is a point-to-point connection.

Alternatives for each of these cases are described in more detail in the following sections of this module.

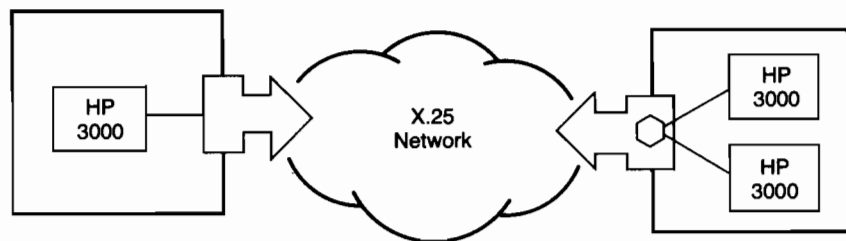
Access to an X.25 Company-wide Network

Alternative 1: HP System-to- HP System Communication Over X.25

Alternative 1a: Direct X.25 System Access

Direct connection of one or several HP 3000 computers to an X.25 network is the best alternative when the X.25 traffic is heavy and performance is a priority.

Functional Description



By running the NS 3000/V Network Services, terminal users and software processes can open multiple sessions to remote locations. They can logon to remote systems, transfer data and access remote files, data bases and peripherals. An X.25 line concentrator can be used to allow several systems to share one single access line to an X.25 network. HP 3000 computers can communicate over public and private X.25 networks.

Features and Benefits

Features	Benefits
1) Direct X.25 network connection	1) Saves cost and overhead of gateway system
2) Powerful Network Services providing access to remote data, programs and peripherals	2) Programmers and users can utilize resources throughout the network, saving costs and improving asset utilization
3) Runs over public and private X.25 networks	3) High connectivity to remote systems
4) International standards protocols	4) Preserves network investments
5) Interactive and batch data exchange	5) Serves multiple purposes
6) Share multiple access to the network through an X.25 line concentrator	6) Minimizes network access costs
7) One single network access for both terminal and system-to-system calls	7) Minimizes network costs

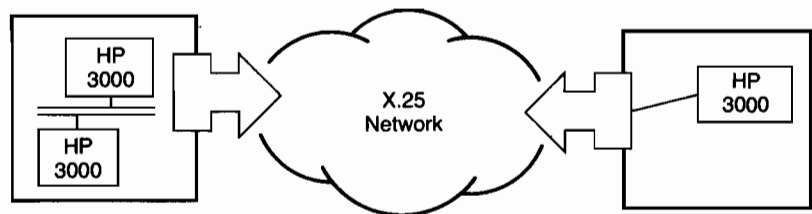
Product Reference List

HP 32344A NS/3000 Network Services
HP 24405A NS X.25 3000/V Network Link

Alternative 1b: X.25 System Access Through a LAN Gateway

This alternative is appropriate when the customer's HP 3000 computers are interconnected over a LAN and when minimizing network access costs, rather than performance, is a priority.

Functional Description



The HP 3000 computers are connected to the LAN via NS Network Services and the NS LAN 3000/V Link. One of these systems is also connected to the X.25 network via NS 3000/V Network Services and the NS X.25 3000/V Link. If there is a limited need for X.25 data communications, it will act as a LAN-to-X.25 gateway for the other systems, when required. In the case of high data communication traffic, it may be desirable to dedicate the system to the gateway function.

Features and Benefits

Features	Benefits
1) Interactive and batch data exchange	1) Serves multiple application needs with same network, lowering overall costs
2) One single X.25 network access for all LAN-based systems	2) Minimizes network access costs
3) Same access link for remote workstations and remote systems	3) Minimizes network access costs

Product Reference List

HP 32344A NS 3000/V Network Services
HP 24405A NS X.25 3000/V Network Link
HP 30240A ThinLAN 3000/V Link

Alternative 2: SNA Over X.25 Network

The SNA over X.25 solution is appropriate when:

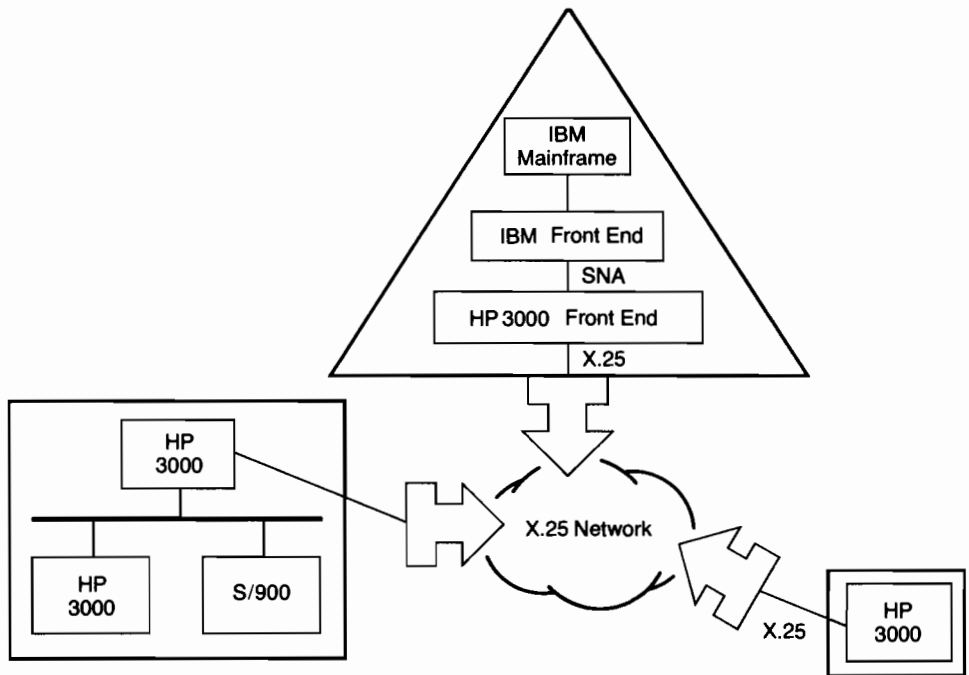
- The customer has standardized on X.25 as a backbone.
- The customer wishes to communicate from an HP 3000 to an IBM mainframe with SNA software and to another HP system with NS 3000 over an X.25 network and he does not want to maintain two separate networks.
- The X.25 backbone can also be used to carry SNA communications between IBM systems and IBM terminals.

Alternative 2a: HP 3000 X.25-to-SNA Gateway

An HP 3000 X.25-to-SNA gateway solution is appropriate when:

- There is limited traffic between the remote HP 3000 systems and the IBM system at headquarters.
- An HP 3000 is available at headquarters. The HP 3000 gateway need not be dedicated to this function and can be used for other applications, depending on traffic load.
- Reduced costs have priority over HP-IBM performance.
- Transparent access is not required for HP-IBM communications.

Functional Description



An HP 3000 system can be used at headquarters to serve as an X.25-to-SNA gateway. The remote HP 3000 systems will communicate with the HP 3000 gateway system using NS over X.25. When remote users require access to applications on the IBM mainframe, the HP 3000 gateway system provides protocol conversion between an NS session on the HP 3000 and SNA to the IBM. This conversion is not transparent to the users or programs on the remote system; programming must be done on the gateway HP 3000 to provide transparent access or route output back to the originator's node.

SNA products are only required on the HP 3000 gateway system; the remote HP 3000s only need the NS services and X.25 products. All the remote HP-to-HP communications are accomplished via the X.25 network.

When planning for this alternative, it is advisable to consult with an HP Network Consultant on performance and implementation issues.

Features and Benefits

Features

- 1) Only NS and X.25 link products needed on remote systems.
- 2) HP-to-IBM products are only needed on the HP 3000 gateway system (except HP OfficeConnect to DISOSS).

Benefits

- 1) Lowers cost of communications to IBM. Simplifies network management and maintenance.
- 2) Lowers cost, easy to maintain, less CPU overhead on the remote HP 3000 systems.

Product Reference List

On Gateway

HP 30247A/R	SNA IMF/V
HP 30245A/R	SNA NRJE/V
HP 30246A	SNA Link/V
HP 32344A	NS 3000/V Network Services
HP 24405A	NS X.25 3000/V Network Link

On Remote Node

HP 32344A	NS 3000/V Network Services
HP 24405A	NS X.25 3000/V Network Link

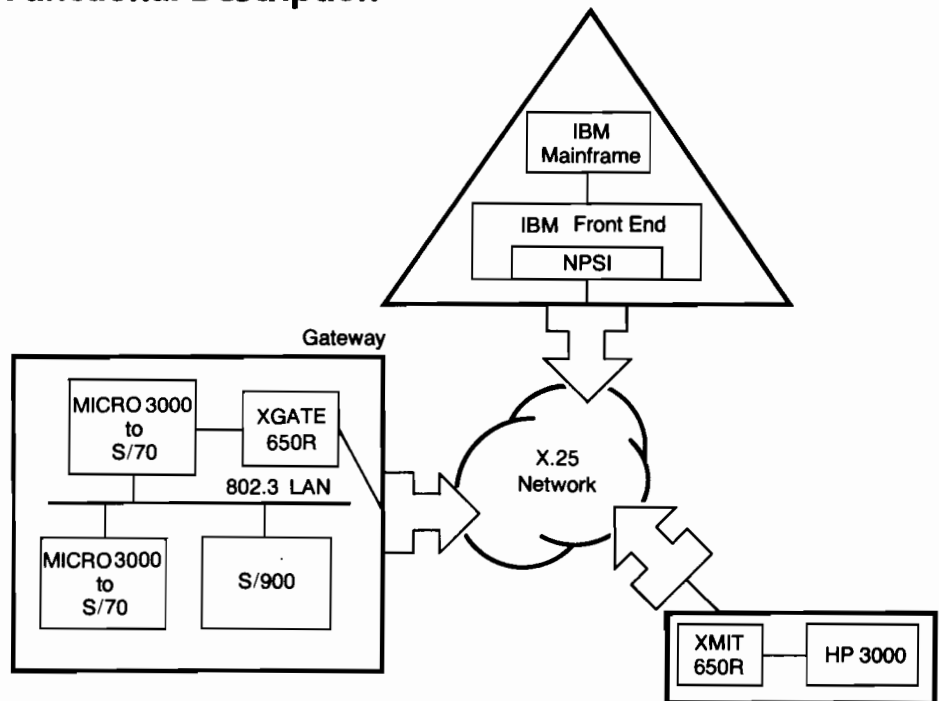
Alternative 2b: SNA/X.25 Protocol Conversion

Protocol conversion is an appropriate solution when:

- There is a need for heavy data communication traffic between remote HP systems and IBM mainframes at headquarters.
- High performance for HP-to-IBM communications is a priority over lower datacomm costs.
- It is acceptable to have two X.25 access lines or one X.25 access line with a small X.25 concentrator at each remote site.

The XGATE protocol converter can front-end either an SNA Gateway on an 802.3 LAN or a standalone HP 3000 running SNA communication software.

Functional Description



Using an SNA/X.25 protocol converter, an HP 3000 system running the HP-IBM SNA communication software (SNA NRJE, SNA IMF and SNA Link) can access an IBM mainframe over a public or private X.25 network.

As part of the Value-Added Marketing Program, Hewlett-Packard has tested the XGATE 650R SNA/X.25 protocol converter from XMIT AG. Based on extensive testing in HP laboratories, the XGATE 650R is the HP-recommended solution. Although the XGATE 650R is recommended by HP, it does not appear on the HP price list and all product service is performed by XMIT AG.

Features and Benefits

Features

- 1) SNA/X.25 protocol conversion.
- 2) No change to the SNA NRJE and SNA IMF interface when using the XGATE 650R SNA/X.25 protocol converter.
- 3) Performs SNA/X.25 conversion without adding overhead to the HP 3000.

Benefits

- 1) Cost savings of using X.25 backbone network for both HP-to-IBM and HP-to-HP traffic.
- 2) SNA/X.25 is totally transparent to the end user who accesses SNA NRJE and SNA IMF in exactly the same way that it would be if he had an SNA/SDLC point-to-point connection.
- 3) High-performance HP 3000-to-IBM access is provided for both SNA/SDLC point-to-point and X.25 connections.

Product Reference List

On MPE/V HP 3000 Systems

HP 30247A/R	SNA IMF/V
HP 30245A/R	SNA NRJE/V
HP 30246A	SNA Link/V

On MPE/XL HP 3000 Systems

HP 30293A/R	SNA IMF/XL
HP 30292A/R	SNA NRJE/XL
HP 30291A/R	SNA Link/XL

Referenced Non-HP Products

XMIT XGATE 650R: SNA/X.25 Protocol Converter

Access to an SNA Company-wide Network

SNA Over SNA/SDLC Network

HP 3000 to IBM communications products can be used when an SNA network has been installed. However, an X.25 network provides a more economical and more flexible alternative to a hierarchical SNA network. An X.25 subnetwork can be installed for (HP 3000) peer-to-peer communications supporting applications distributed across several locations. Over the same X.25 subnetwork, users can access IBM mainframes using the SNA over X.25 products referred to in the previous section (SNA over X.25).

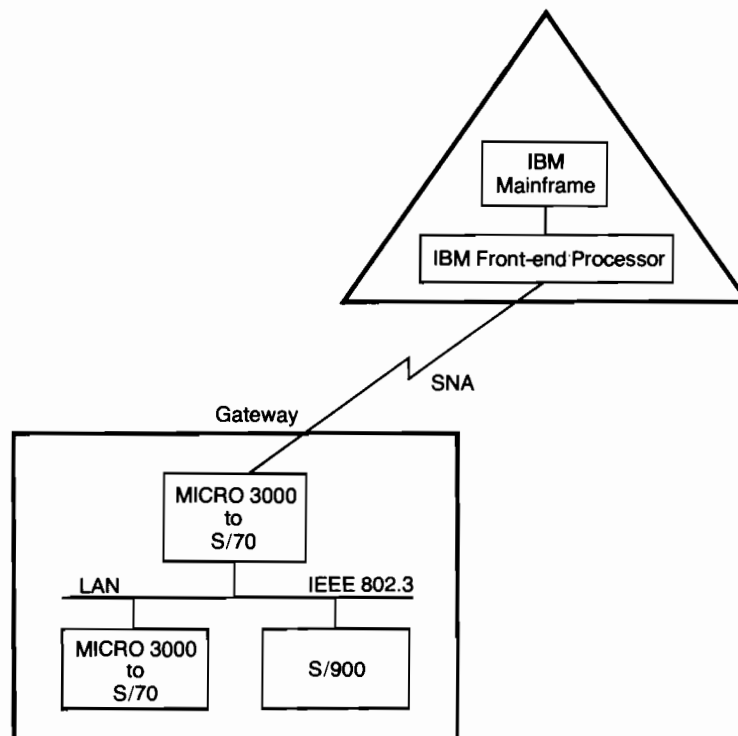
Alternative 1: MPE/V SNA Gateway (HP 3000 to IBM)

An MPE/V SNA Gateway solution is appropriate when:

- At least 2 – 3 systems require IBM access
- Users are willing to accept lower performance than a standalone solution in order to pay a lower price for the datacomm required
- User desires all datacomm overhead on one system
- It is acceptable for all applications that programmatically access IBM to reside on the gateway node
- User needs IBM access to first-release HP 3000 Series 900

Note: Standalone SNA access is now available on the HP 3000 Series 900 via SNA Link/XL, SNA/MPE/XL and SNA NRJE/XL.

Functional Description



The picture shows two HP 3000 systems accessing an SNA Gateway to IBM. The gateway provides SNA batch job submission, SNA interactive access to 3270 applications and SNA LU 6.2 access to DISOSS for electronic mail exchange to/from HPDesk users.

All HP 3000 systems, ranging from a MICRO 3000 to a Series 70 to the new 900 Series, can access the gateway. The gateway itself can be any MPE/V-based HP 3000 (MICRO 3000 to Series 70) depending on performance requirements. Notice that only the gateway system is running the SNA emulation software (SNA NRJE, SNA IMF, LU 6.2 Base and SNA Link) in addition to the SNA Server product which makes this system the gateway. In contrast, the two user systems only need to install SNA Server Access to be able to use the gateway. All three systems use NS 3000/V and LAN/V Link to communicate over the IEEE 802.3 LAN.

Features and Benefits

Features

- 1) Users can submit batch jobs through SNA NRJE and SNA IMF as if those products were installed on their own systems.
- 2) Batch job output and printing from interactive applications are automatically routed back to user nodes.
- 3) OfficeConnect to DISOSS needs to be installed on each HP system that will exchange messages with DISOSS; LU 6.2 Base needs to be installed on the gateway system only.

Benefits

- 1) No additional training is required for SNA IMF or SNA NRJE users.
- 2) Users save time and effort by not having to go to the gateway processor to retrieve their output.
- 3) Users save money because the products were designed to be used in a gateway configuration.

Product Reference List

On Gateway

HP 30247A/R	SNA IMF/V
HP 30245A/R	SNA NRJE/V
HP 30246A	SNA Link/V
HP 30252A/R	LU 6.2 Base
HP 30254A/R	SNA Server
HP 27515A	HP OfficeConnect to DISOSS
HP 32344A/R	NS 3000/V Network Services
HP 30240A	ThinLAN 3000/V

On User Node

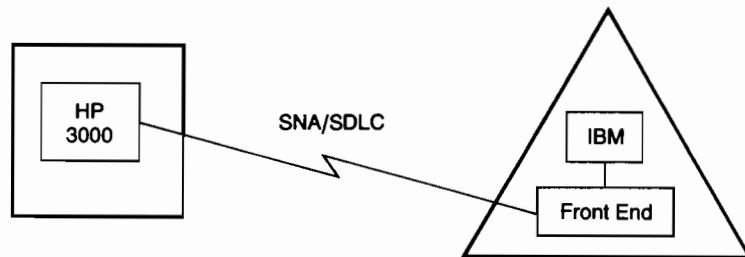
HP 30255A/R	SNA Server Access/V
HP 30256A/R	SNA Server Access/XL
HP 27515A	HP OfficeConnect to DISOSS
HP 32344A/R	NS 3000/V
HP 30240A	ThinLAN 3000/V

Alternative 2: Standalone SNA Access (HP 3000 to IBM)

The standalone SNA products are appropriate when:

- Only one or two systems at the site require IBM mainframe access
- Optimal performance is a priority over saving money on datacomm costs
- It is acceptable to run HP-IBM datacomm software on each system
- It would not be acceptable to run applications that require programmatic access to SNA IMF and SNA NRJE on the gateway node

Functional Description



The same types of SNA emulation that are done through the SNA gateway are also available as standalone products: SNA IMF for interactive access, SNA NRJE for batch job submission and LU 6.2 Base (together with HP OfficeConnect to DISOSS) for electronic mail exchange and DISOSS library access. An SNA Link is required on each system and all three of the above products can be supported on the same system over the same link.

Features and Benefits

Features

- 1) High-performance alternative to the SNA Gateway.
- 2) Interactive access to IBM through 3274 cluster controller emulation.
- 3) SNA batch job access with sophisticated output management.
- 4) Reverse NRJE access to the HP 3000.
- 5) DISOSS connection using Revisable Form DCA, Final Form DCA and Library Services (on MPE/V HP 3000 systems only).
- 6) LU 6.2 application programming interface.

Benefits

- 1) Provides more efficient use of the HP 3000 system.
- 2) Improves productivity and reduces cost since only one HP terminal is required to access applications on both an HP 3000 and on an IBM mainframe.
- 3) Improves productivity through quick and efficient access to IBM host-based resources with output routed to any HP 3000 or distributed laser print stations.
- 4) Increases productivity of IBM users by allowing them to access HP 3000 applications not provided on the IBM mainframe.
- 5) Improves company-wide communications by creating a shared electronic mail network and permits users to easily share documents located in a central DISOSS library.
- 6) SNA program-to-program communication between HP 3000 user-written applications and IBM mainframe LU 6.2 applications improves run-time performance and enhances error detection and recovery for uses that include file transfer and data base update.

Product Reference List

On MPE/V HP 3000 Systems

HP 30247A/R	SNA IMF/V
HP 30245A/R	SNA NRJE/V
HP 30246A	SNA Link/V
HP 30252A/R	LU 6.2 Base
HP 27515A	HP OfficeConnect to DISOSS
HP 30253A/R	LU 6.2 API

On MPE/XL HP 3000 Systems

HP 30293A/R	SNA IMF/XL
HP 30292A/R	SNA NRJE/XL
HP 30291A/R	SNA Link/XL



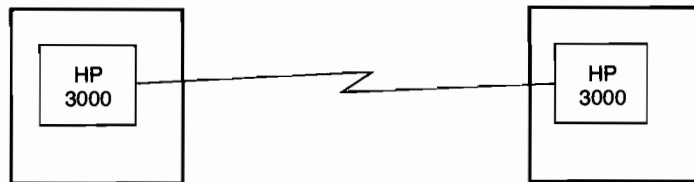
A Point-to-Point Company Network

If the company's wide area network is based on point-to-point links, then the only solution for remote system-to-system communication is direct point-to-point links.

Synchronous communications are preferable when there are needs for high data security and performance requirements.

Asynchronous communications are better for customers looking for low-cost/low-speed solutions for limited batch or short interactive traffic.

Functional Description



The NS Point-to-Point and the Asynchronous Serial Network Links (ASNL) are the synchronous and asynchronous modem connections for HP 3000 computers. They feature the networking capabilities of the NS Network Services for end users and software processes to access remote computers. Transport level is common to the Point-to-Point, ASNL and LAN links.

Features and Benefits

Features	Benefits
1) Powerful Network Services providing access to remote data, programs and peripherals.	1) Programmers and users can utilize resources throughout the network, saving costs and improving asset utilization.
2) Transparent gateway to HP 3000 on LAN.	2) Users don't need extensive training to access company-wide resources.
3) Choice of synchronous high-speed and asynchronous low-speed connections.	3) Adapted to users' need: high performance and low-cost solutions.

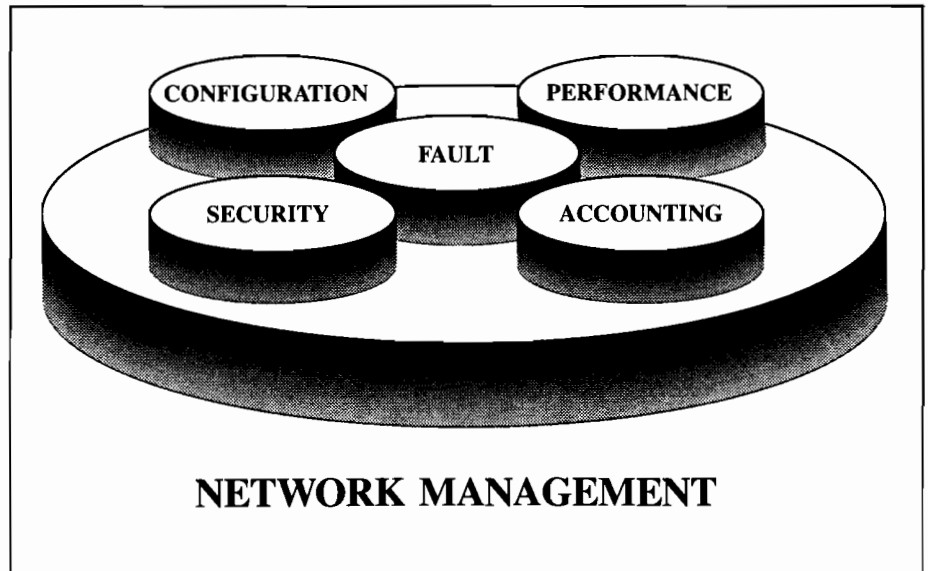
Product Reference List

HP 32344A NS 3000/V Network Services
HP 30284A,
HP 30285A NS Point-to-Point 3000/V
HP 32003A Asynchronous SERIAL Network Link
(for HP 3000s)

Network Management Module

Introduction

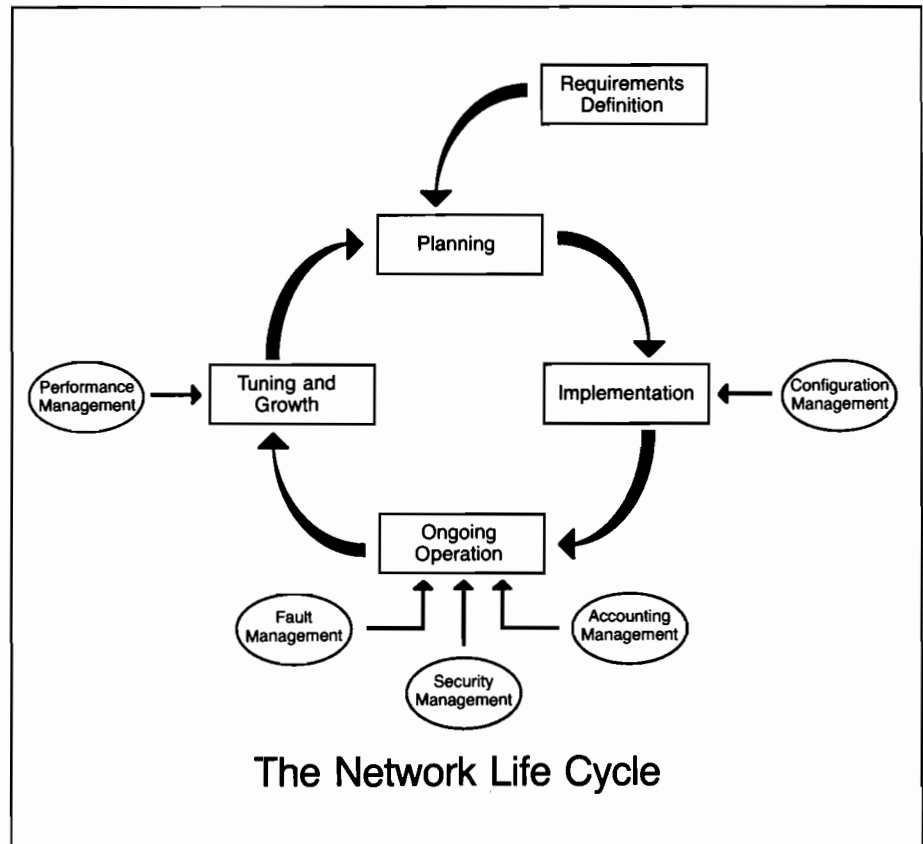
Network Management is the ability to monitor, diagnose and control each component of a network. The International Standards Organization (ISO) has identified five Network Management functions: Fault Management, Performance Management, Accounting Management, Configuration Management and Security Management.



- **FAULT MANAGEMENT** provides the ability to detect, diagnose and resolve problems throughout the network with the assistance of alarms and error reports. Fault management includes the capability to restore components that have failed.
- **PERFORMANCE MANAGEMENT** is the ability to optimize network performance through the collection and analysis of data about the network (e.g., measurements of response time and throughput).
- **ACCOUNTING MANAGEMENT** keeps track of network resource utilization and traffic in order to manage costs and accurately bill for network use.
- **CONFIGURATION MANAGEMENT** helps to provide continuous network operation by controlling standard local and remote configurations of network components.
- **SECURITY MANAGEMENT** protects network components from access by unauthorized parties.

Network Life Cycle

The objective of Hewlett-Packard's Network Management is to provide network customers with the tools to create and manage private data networks through all phases of the network life cycle.



First the users define what they want to accomplish using the network. Then comes the planning phase, which involves mapping the user's requirements to the feature set of the network management. The implementation phase begins when the network is installed and configuration tools are used to help in setting up the local and remote systems. Configuration management tools can also be used in the next phase, ongoing operation. It is during day-to-day operation that fault management tools become important for monitoring the network and detecting problems. Accounting management tools to track network use and security management tools to protect the network are also vital to ongoing operation of the network. After the network is up and running, data collected with performance management tools can be used to fine-tune the network. The collected data can then be analyzed to improve the network and to plan for future growth.

Network Management Users

The responsibilities associated with network management cover a wide range of activities. Here we present descriptions of four typical network management users within a corporation. While your company may be organized somewhat differently, the descriptions below provide a perspective on how Hewlett-Packard's Network Management tools can be used to manage your firm's network.

MIS Manager

The MIS Manager makes the buying decision for a company's computer systems and local area network components. This person is looking for a comprehensive set of tools that will enable the department to effectively manage communications throughout the network. A major area of responsibility for the MIS Manager is customer service. This individual is concerned with how network performance affects the end users. In addition, the MIS Manager is accountable for the cost effectiveness of the network, in terms of network and personnel costs. The network and the tools used to manage it must be not only productive but also cost efficient. The MIS Manager plans for the company's communication needs by determining the role distributed systems should play in the company's future and evaluating how the systems in place must grow to meet those needs.

Telecommunications Manager

The Telecommunications Manager's responsibilities are similar to those of the MIS Manager, although they concern the components of the company-wide backbone network. This manager must effectively integrate communications throughout all parts of the company, from corporate headquarters and business offices to regional and branch offices to factories and research facilities. Like the MIS Manager, the Telecommunications Manager is accountable for customer service and network costs. This person is also responsible for efficiently managing the company's telecommunications equipment and circuits. The Telecommunications Manager must plan for the company's future communications needs by determining what role telecommunications will play in the company's future and what equipment will be required to meet those needs.

Data Communications Specialist

The Data Communications Specialist is responsible for the accuracy and timeliness of the data traffic that flows through the network. This specialist's main area of responsibility centers around troubleshooting network communication problems. To perform this task, the Data Communications Specialist needs a wide range of tools to accurately and efficiently diagnose and resolve data communication problems. This person also needs tools to monitor network components so as to optimize network performance. The Data Communications Specialist plays a major role in network maintenance by using network management tools to resolve potential problems in the network before they occur.

Distributed Systems Operator

The Distributed Systems Operator is responsible for managing systems in the network. With networks growing ever larger and more complex, an operator is often required to manage multiple systems from a central site. The Distributed Systems Operator must accurately and efficiently diagnose and troubleshoot problem areas so that computer downtime can be minimized. This person must also maintain current records of the systems' hardware and software configurations so that communications continue smoothly throughout the network.

Alternative 1: HP Network Management for the MIS Manager

Hewlett-Packard provides a complete set of tools and support services that meet the MIS Manager's Network Management responsibilities:

- Customer Service
- Network Cost/Control
- Strategic Planning
- Future Growth

Hewlett-Packard's Network Management tools provide the MIS Manager with the ability to monitor network performance, track network costs and plan for future growth.

Features

- 1) Graphical representation of network performance
- 2) Centralized control and monitoring of operations of multiple HP 3000 systems
- 3) Predictive capabilities
- 4) Network Consultants to aid in planning future communication needs
- 5) Support services to efficiently manage the network

Functional Description

1) Graphical representation of network performance

As a network grows and its complexities increase, it becomes impossible to manage performance simply by relying on feedback from users. The MIS Manager needs to know more about what goes on in the network: who is using it, whether the network devices are overloaded and when it needs to grow. This information must be presented clearly and concisely so that the MIS Manager can spend time making decisions to improve the network instead of merely sifting through data. The powerful data analysis software on Hewlett-Packard's LAN and WAN performance analysis systems eases the MIS Manager into managing a network.

2) Centralized control and monitoring of operations of multiple HP 3000 systems

As networks increase in size and complexity, the operational costs also rise. The MIS Manager needs tools to help keep network expenses to a minimum. Hewlett-Packard's Network Management provides centralized control and monitoring of multiple HP 3000 systems. What this means to the MIS Manager is a decrease in personnel costs since it will no longer be necessary to maintain an operations staff at each remote node. Furthermore, these tools help in monitoring usage trends and identifying problem areas so the MIS Manager can take corrective action before the problem seriously affects performance.

3) Predictive capabilities

Network Predictive, an HP Response Center tool, increases network uptime by periodically analyzing error rates logged by network software components. By identifying potential and imminent failures, corrective action may be taken before system reliability and performance are noticeably affected.

4) Network Consultants to aid in planning future communications needs

The rapid growth of networks and changing network technology have created an urgent need for network support services. Hewlett-Packard, the long-recognized industry leader in support and service, offers a comprehensive range of network support services that can be tailored to your company's unique requirements. The Customer Network Center (CNC) is just one of HP's network consulting organizations that provides assistance with the design, implementation and operation of networks worldwide.

5) Support services to efficiently manage the network

Hewlett-Packard's Response Center and factory support engineers assist MIS Managers in the development, maintenance and operation of their networks. HP's comprehensive support offerings include network monitoring, historical trend analysis, network performance tracing and graphical network topology mapping.

Product Reference List

Hardware

4951C	Portable Protocol Analyzer
4952A	High-Speed Portable Protocol Analyzer
4953A	High-Speed Protocol Analyzer
4954A	Portable WAN Protocol Analyzer
4972A	Portable LAN Protocol Analyzer

Software

18212A	LAN Performance Analysis Application Software
18300A	X.25 Network Performance Analyzer
30392A	HP Security Monitor/V
32029A	INCS/3000
32030A	RSOF/3000
32344A	NS 3000/V

Support Products

Network Planning and Design

51429A
51429B

Network Prepare

52430A
52430B

NetAssure

50047P+16B	Base Support Product
50050P+16B	802.3 Connection
50051P+16B	X.25 Connection
50052P+16B	PBX Connection
50053P+16B	SNA Connection
50054P+16B	HP Proprietary Connection

Network Startup

50050P+16A	802.3 Connection
50051P+16A	X.25 Connection
50052P+16A	PBX Connection
50053P+16A	SNA Connection
50054P+16A	HP Proprietary Connection

Customer Network Center

Documentation

32344-90001	NS 3000/V User/Programmer Reference Manual
32344-90002	NS 3000/V Network Manager Reference Manual (Vol. I)
32344-90012	NS 3000/V Network Manager Reference Manual (Vol. II)

Alternative 2: HP Network Management for the Telecommunications Manager

Hewlett-Packard provides a complete set of tools to meet the Telecommunications Manager's Network Management responsibilities:

- Customer Service
- Network Cost/Control
- Telecommunications Management
- Strategic Planning
- Future Growth

Hewlett-Packard's Network Management tools provide the Telecommunications Manager with the ability to monitor network performance, track network costs, manage the telecommunications network and plan for future growth.

Features

- 1) Centralized network management
- 2) Centralized telecommunications management
- 3) Graphical representation of network performance
- 4) T1 fault isolation
- 5) Non-intrusive transmission testing
- 6) Network Consultants to aid in planning future communication needs

Functional Description

1) Centralized network management

The HP Private Packet Network Control System provides sophisticated and easy-to-use management at the heart of the HP X.25 Private Packet Network. The HP Private Packet Network Control System is made up of one or two Network Control Processors (NCP) and optional Auxiliary Service Processors (ASP) that are connected to the network via X.25. Dual Network Control Processors provide call record redundancy and load sharing to increase performance, response and reliability. The Network Control Processors may directly manage the network or may, in larger networks, download their configuration information to Auxiliary Service Processors situated throughout the network.

The Network Operator Console (NOC) is the user interface to the network control and administration functions. The ease and adaptability of the Network Operator Console user interface in combination with the configuration and administration capabilities of the Network Control Processor and Auxiliary Service Processors provide a simple yet powerful interface to the Network Control System.

2) Centralized telecommunications management

HP RATES is a premier management tool for maintaining a private line network. It combines circuit access equipment, comprehensive measurement and control software, sophisticated data base management software and a centralized computer system to form a complete test and management tool. With this system, tests on distant private lines are performed by centralized test personnel from any conveniently located computer terminal.

Not merely an automated test system, HP RATES includes a comprehensive data base management system that tracks all pertinent information about lines and locations; easy-to-understand test procedures that permit rapid fault isolation and reduce the time needed to master the system; and simple circuit data entry facilities with data validation. Finally, there is the security of a built-in diagnostic system that can pinpoint any problem within HP RATES itself and a fail-safe mechanism that ensures the telephone network will never be affected by the test equipment.

3) Graphical representation of network performance

As a network grows and its complexities increase, it becomes impossible to manage performance simply by relying on users' feedback. The Telecommunications Manager needs to know more about what goes on in the network: who is using it, whether the network devices are overloaded and when it needs to be expanded. By presenting network information in flexible, easy-to-use graphical formats, Hewlett-Packard helps the Telecommunications Manager efficiently manage the network without having to wade through useless data.

4) T1 fault isolation

To achieve the performance and availability objectives of T1 leased and DDS services, the Telecommunications Manager must be able to clear trouble fast. He needs reliable equipment that will trace individual circuits, locate the source of an impairment and determine who should fix it. There is no need to disturb revenue-earning traffic: the HP 3787B Digital Data Test Set has a comprehensive range of in-service performance-monitoring measurements. Apart from its T1 and DDS test capability, the HP 3787B is a powerful tool for testing 56 Kbps switched and packet-switched services.

5) Non-intrusive transmission testing

Telecommunications Managers and their support groups are also responsible for the testing of analog data lines. The HP 4948A is a new Transmission Impairment Measuring Set (TIMS) that allows the users to test voice-grade leased lines while they are still in service.

6) Network Consultants to aid in planning future communication needs

The rapid growth of networks and changing network technology have created an urgent need for network support services. Hewlett-Packard, the long-recognized industry leader in support and service, offers a comprehensive range of network support services that can be tailored to your company's unique requirements.

Product Reference List

Hardware

HP Private Packet Network	Network Control System
3787B	Digital Data Test Set
4925B	Bit Error Rate Test Set
4948A	In-Service Transmission Impairment Measuring Set
4951C	Portable Protocol Analyzer
4952A	Line Analyzer
4953A	High-Speed Protocol Analyzer
4954A	Portable WAN Protocol Analyzer
37100S	HP RATES

Software

18264A	SNA and X.25 Link-Level Statistics
18300A	X.25 Performance Analyzer

Support Products

Network Planning and Design

51429A
51429B

Network Prepare

52430A
52430B

NetAssure

50047P+16B	Base Support Product
50050P+16B	802.3 Connection
50051P+16B	X.25 Connection
50052P+16B	PBX Connection
50053P+16B	SNA Connection
50054P+16B	HP Proprietary Connection

Network Startup

50050P+16A	802.3 Connection
50051P+16A	X.25 Connection
50052P+16A	PBX Connection
50053P+16A	SNA Connection
50054P+16A	HP Proprietary Connection

Customer Network Center

Alternative 3: HP Network Management for the Data Communications Specialist

Hewlett-Packard provides a complete set of tools and support services to meet the Data Communications Specialist's Network Management responsibilities:

- Troubleshooting Network Communication Problems
- Optimizing Network Performance
- Network Maintenance

Hewlett-Packard's Network Management tools provide the Data Communications Specialist with all the tools necessary in order to troubleshoot communication problems, track network performance and perform network maintenance.

Features

- 1) Ability to analyze data across any link
- 2) Fault isolation
- 3) Graphical and tabular representation of network performance
- 4) Predictive capabilities
- 5) Network simulation
- 6) Remote operation
- 7) Network Consultants to assist in network maintenance
- 8) Support services to efficiently maintain the network

Functional Description

1) Ability to analyze data across any link

HP offers a family of powerful, general-purpose protocol analyzers, with software and accessories to meet the Data Communication Specialist's needs. While maintaining family compatibility, each analyzer is tailored for a different environment, with different features and characteristics. All have common operating, setup, remote transfer and display characteristics. Applications packages guarantee that HP protocol analyzers will not be made obsolete by the specialist's changing needs, or by changing technology and standards.

2) Fault isolation

Troubleshooting data communication problems can be a very involved process since there are many hardware and software components to be investigated. Hewlett-Packard provides a wide range of diagnostic and troubleshooting tools.

3) Graphical and tabular representation of network performance

As a network grows and its complexities increase, it becomes impossible to manage performance simply by relying on feedback from users. The Data Communications Specialist needs to know more about what goes on in the network: who is using it, whether the network devices are overloaded and when it needs to be expanded. By presenting network information in flexible easy-to-use graphical formats, Hewlett-Packard lets the Data Communications Specialist spend time making decisions to improve the network instead of having to wade through useless data.

4) Predictive capabilities

Network Predictive, an HP Response Center tool, increases network uptime by periodically analyzing error rates logged by network software components. By identifying potential and imminent failures, corrective action may be taken before system reliability and performance are noticeably affected.

5) Network simulation

Beyond the powerful analysis capabilities in non-intrusive monitor mode, all HP protocol analyzers can simulate various network components. Softkey and menu programming allow easy stimulus/response testing of network components without tying up other network resources. All triggering and analysis capabilities are available while actively simulating network components. Simulation can be especially useful in isolating intermittent problems, or for testing a new application or device before system connection.

6) Remote operation

HP protocol analyzers support the remote exchange of data, menus, setups and applications software over RS-232/V.24. The HP 4952A, 4953A and 4972A provide total remote operation over RS-232/V.24. Remote capability gives field service personnel access to central site expertise and central site experts direct access to remote sites that lack qualified service personnel.

7) Network Consultants to assist in resolving communication problems

The rapid growth of networks and changing network technology have created an urgent need for network support services. Hewlett-Packard, the long-recognized industry leader in support and service, offers a comprehensive range of network support services that can be tailored to your company's unique requirements.

8) Support services to efficiently maintain the network

Hewlett-Packard's Response Center and factory support engineers assist Data Communications Specialists in the development, maintenance and operation of their networks. Hewlett-Packard's comprehensive support offerings include network monitoring, historical trend analysis, network performance tracing and graphical network topology mapping.

Product Reference List

Hardware

3787B	Digital Data Test Set
4925B	Bit Error Rate Test Set
4948A	In-Service Transmission Impairment Measurement Set
4951C	Portable Protocol Analyzer
4952A	Line Analyzer
4953A	High-Speed Protocol Analyzer
4954A	Portable WAN Protocol Analyzer
4955A	Programmable Protocol Analyzer
4972A	Portable LAN Protocol Analyzer

Software

18212A	LAN Performance Analysis Application Software
18264A	SNA and X.25 Link-Level Statistics
18300A	X.25 Network Performance Analyzer

Support Products

Network Planning and Design

51429A
51429B

Network Prepare

52430A
52430B

NetAssure

50047P+16B	Base Support Product
50050P+16B	802.3 Connection
50051P+16B	X.25 Connection
50052P+16B	PBX Connection
50053P+16B	SNA Connection
50054P+16B	HP Proprietary Connection

Network Startup

50050P+16A	802.3 Connection
50051P+16A	X.25 Connection
50052P+16A	PBX Connection
50053P+16A	SNA Connection
50054P+16A	HP Proprietary Connection

Customer Network Center

Documentation

5953-7682	LAN 3000/V Configuration Guide
5955-7681	LAN Link Hardware Troubleshooting Manual
5957-4624	Making the LAN Connection
5958-8542	HP SNA Products: Manager's Guide
5958-8543	HP SNA Products: ACF/NCP and ACF/VTAM Guide
5958-8546	HP SNA Products: CICS Guide
5958-8547	HP SNA Products: DISOSS Guide
5959-20801	APPC Subsystem Node Manager's Guide

Alternative 4: HP Network Management for the Distributed Systems Operator

Hewlett-Packard provides a complete set of tools and support services that meet the Distributed Systems Operator's Network Management responsibilities:

- Minimizing Computer Downtime
- Systems Hardware and Software Configuration Maintenance
- Troubleshooting System Problems

Hewlett-Packard's Network Management tools provide the Distributed Systems Operator with the ability to minimize system downtime, maintain system configurations and troubleshoot system problems.

Features

- 1) System functions to manage the network
- 2) Distributed systems management
- 3) Predictive capabilities
- 4) Support services to efficiently manage the systems
- 5) Third-party offerings that aid in distributed systems management

Functional Description

1) System functions to manage the network

The Distributed Systems Operator has a variety of tools and utilities available to supervise the operation of the system and the data communication products. Some are provided with the data communication products and some are provided on the HP 3000 operating system.

2) Distributed systems management

NetCI (Network Command Interpreter), which is integrated into NS 3000/V Network Services, is a tool that allows centralization of operator functions and thus promotes operator efficiency and effectiveness. NetCI allows a central operator to execute a command remotely to all systems reachable by NS 3000. With this powerful tool, one system operator can manage multiple HP 3000s on the network. This functionality will reduce troubleshooting time and effort by enabling the operator to quickly isolate some network problems from one terminal.

Integrated Network Console Support (INCS/3000) provides a single integrated console to manage multiple HP 3000 computers in a network. INCS/3000 integrates full HP 3000 operator capabilities with data communication network operation and control.

Remote System Operation Facility (RSOF/3000) is the set of software components that resides on all the Remote Node HP 3000 computers, and provides the interface to INCS/3000.

OPT/3000 (On-line Performance Tool) is the systems operator's window into the system, and allows monitoring of system workload, memory and CPU use, I/O traffic, and table utilization. By viewing the activity in detail, the operator can modify the system to improve performance and more efficiently design new applications. Features of OPT/3000 include interactive reporting, graphic presentation and periodic summary reporting of resource use.

3) Predictive capabilities

Network Predictive, an HP Response Center tool, increases network uptime by periodically analyzing error rates logged by network software components. By identifying potential and imminent failures, corrective action may be taken before system reliability and performance are noticeably affected.

4) Support services to efficiently manage the systems

Hewlett-Packard's Response Center and factory support engineers assist the Distributed Systems Operators in the development, maintenance and operation of their networks. Hewlett-Packard's comprehensive support tools include network monitoring, historical trend analysis, network performance tracing and graphical network topology mapping.

Product Reference List

Software

30392A	HP Security Monitor/V
32029A	INCS/3000
32030A	RSOF/3000
32238A	OPT/3000
32344A	NS 3000/V

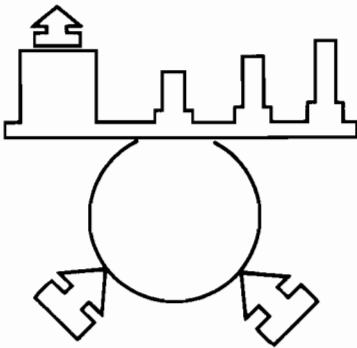
Documentation

32033-90005	System Operation and Resource Management Recovery Manual
32238-90001	OPT/3000 Reference Manual
32344-90001	NS 3000/V User/Programmer Reference Manual
32344-90002	NS 3000/V Network Manager Reference Manual (Vol. I)
32344-90005	NS 3000/V Error Messages and Recovery Manual
32344-90012	NS 3000/V Network Manager Reference Manual (Vol. II)



HP Network Support Module

Introduction



The rapid growth of networks and changing network technology have created an urgent need for network support services. Hewlett-Packard offers a comprehensive range of network support services that can be tailored to customers' unique requirements — including planning and design, implementation, maintenance and education.

- **Network Planning and Design**

An HP Network Consultant analyzes the customer's communications requirements and creates a detailed network design that meets current and forecasted needs.

- **Network Prepare**

HP works with the customer to develop a network implementation plan that contains a schedule of critical activities and recommendations for network staffing, training and operations procedures.

- **Network Startup**

HP helps the customer get the network up and running quickly, by providing coordination assistance for installation activities and resources, connection verification testing and complete network documentation.

- **NetAssure**

HP maximizes the uptime of a network by providing network problem isolation and management of problem resolution in multivendor network environments.

- **Customer Education**

HP provides a range of standard and customized training for network users, operators and managers.

The specific features and benefits of these services follow.

Features and Benefits

Features	Benefits
Network Planning and Design	
1) In-depth requirements analysis	1) Custom solution for your customer's unique needs
2) Comprehensive network design	2) Control network costs
3) Growth plan	3) Flexibility for future needs
Network Prepare	
1) Implementation	1) Implementation problems anticipated
2) Network staffing and training recommendations	2) Productivity of the network and users is increased
3) Network procedures identification	3) Operating problems are reduced
Network Startup	
1) Network startup schedule	1) Simplifies the startup process
2) Network configuration and testing	2) Ensures a fully operational network
3) Network documentation	3) A tool for better network management
NetAssure	
1) One phone call	1) Easy problem resolution
2) Multivendor problem management	2) Simplified service interface
3) Fast response time	3) Reduced network downtime
4) NetAssure Newsletter	4) Timely HP network product and support information

Hardware and Software Support

The Network Support Program complements HP's standard hardware and software support services:

- **Software Materials Subscription**
Provides all of the materials and information needed to keep up to date on HP software and documentation.
- **Response Center Support**
Includes the software materials subscription service listed above and telephone assistance from experienced professionals in the HP Response Centers for HP software and applications.
- **Account Management Support**
Includes the software support services listed above and personalized, on-site support. Through Support Management Reviews and Software Release Planning sessions, an account-assigned support representative assists the customer in preparing for future software needs.
- **Standard System Maintenance Service**
This same-day hardware service program provides on-site response within four coverage hours for HP systems and peripherals. The coverage hours of this service can be expanded to 24 hours a day, 7 days a week.
- **Basic System Maintenance Service**
This hardware service program provides a one-workday response time for HP systems and peripherals.

Hewlett-Packard's support has consistently been rated as the best in the industry, based on overall excellence as reported in the Datapro surveys for the past six years. Your HP Sales Rep will work with you to develop a support strategy to meet your business needs.

Product Reference List

Network Planning and Design

51429A
51429B

Network Prepare

51430A
51430B

Network Startup

50050P+16A	802.3 connection
50051P+16A	X.25 connection
50052P+16A	PBX connection
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NetAssure

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