.c.Unit 6 Systems and Network Management;

.c.Purpose;

This unit describes the systems and network management capabilities provided to high-end customers by HP's Corporate Business Systems solutions. Included is background information on the importance of systems management, high-end customer needs, and products designed to meet those high-end needs.

This unit focuses primarily on new solutions. It is not a comprehensive discussion of the many HP and third-party solutions that exist for customers -- it describes a subset.

.c.Objectives;

At the end of this unit, you will be able to:

3   Identify critical systems management requirements of the high-end customer.

3   Identify HP and third-party systems management solutions for the high-end customer.

3   List the competitive advantages of HP systems management products.

Unit 6

.c. Introduction**;**
Systems and network management is the process by which
systems and data center managers ensure that environments
operate efficiently and reliably, are secure, and are
adequate to meet future system resource needs.
.c.Elements of Systems and Network Management;
The elements of systems and network management include:

3 Performance management

3 Configuration management

3 Accounting management

3 Security

3 Fault management (covered in Unit 6)

3 Operations control
3   Storage management
.c.High-End Systems Management;
Systems management is especially critical to high-end
customers. High-end systems involve greater complexity
because of the:
3   Large amounts of data to be processed
3   Large number of users utilizing the system
3   Higher level of resources that must be allocated to
running the system
3   Implications of security breaches that affect a larger
community
3   High cost of system malfunction and downtime
The need for tools to manage a "data center" environment
increases as systems provide additional performance and
capacity.
A high-end system that delivers high performance is not
enough « automated and highly functional software and
peripherals that support the systems management effort are
critical.
.c. High-End Customer Needs**;**
.c.Fundamental Needs;
HP systems management solutions address two fundamental
needs of the high-end customer:
3   Automate or reduce operator intervention while
increasing the level and quality of services.
3   Respond to rapidly changing business conditions by
quick and easy access to information.
.c.Specific High-End Needs;
Our solutions also address some specific systems management
needs of the high-end customer:

3   Reduce workloads of system administration staff (and sometimes the number of people on staff).
3   Improve the productivity of the MIS department, since MIS directors are expected to do more with less.
3   Eliminate the need for on-site systems staff at remote data centers by the ability to install, configure, and manage systems from a central site ("lights out").
3   Improve access to information that is needed to run the business more efficiently, such as marketing, inventory, or customer database information. This includes the need to have a disaster recovery plan.

.c.HP Solutions**;**

.c.HP Strategy**;**

HP's strategy is to provide solutions that enable customers to manage complex networks of systems as if they were a single system. This is done using the HP OpenView framework.

.c. Key Messages**;**

HP's Corporate Business Systems provide a comprehensive suite of integrated data center management tools. These tools allow customers to centrally manage their enterprises at a significant cost savings over DEC and IBM systems. HP solutions are a natural fit for any data center environment because of their adherence to industry and de facto standards. In many cases, HP solutions fit into existing heterogeneous environments.

.c. Managing the Elements of Systems Management**;**

.c.HP OpenView**;**

HP OpenView is HP's framework for systems and network management for both.i. MPE/iX; and HP-UX. HP OpenView consists of a family of products, with several that facilitate the management of large systems or data centers from one centralized location.

.c. For the HP 3000**;**

.c.HP OpenView System Manager;

For the MPE/iX environment, **.i.HP OpenView System Manager;** is an existing product that monitors and controls networked (LAN and WAN) HP 3000 systems from one location. It uses a graphical PC-based "management by exception" design, which only alerts the operator if something goes wrong. The following features are new with Release 3.0:

.G.NEWBURST.PCX	.i.3 **Task-Based Filtering**;
;1.5";1.056";PCX	Flexible Task-Based Filtering of Events enables the operator to group device-specific messages together; for example, all tape messages grouped together, the print or job messages grouped together and displayed as an icon on one console, or separated by groups and sent to different consoles. (OpenView System Manager supports up to five consoles.) This feature is very important for large data center environments, where it is

common for one operator to handle tape management while another handles print management. The flexibility of Task-Based Filtering allows customers to manage according to their own practices and policies.

.G.NEWBURST.PCX ;1.5";1.056";PCX the

.i.3 **Automated Response**;
Automated response to messages reduces the

need for operator intervention by initiating an automatic response to messages. Operators benefit by letting the systems run (and correct) themselves unless a problem exceeds a predefined threshold.

.G.NEWBURST.PCX ;1.5";1.056";PCX catalog

3 **Link to Other Applications**
Enhancements to the MPE/iX message catalog

enable its messages (used by most applications) to communicate with HP OpenView System Manager. This feature better enables integrated application management.

.c.HP OpenView Console**;**
.i.HP OpenView Console; is a special high-end standard console for the new HP 3000 CS DX that is based on OpenView System Manager. HP OpenView Console provides a highly effective tool for automated operations.
OpenView Console functionality is particularly important for high-end customers. As configurations grow, there are so many messages generated that it is difficult for an operator to deal with them.
.G.CP115.HPG;4.25";4.25";HPGL

.c. Peregrine's OpenSNA**;**
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PCX

Using **Peregrine's .i.OpenSNA**;, an HP 3000 can forward NetView's alarm and alert information to HP OpenView Network

Node Manager for display and information. HP OpenView
Network Node Manager only runs on HP-UX.
.c. NetBase**;**
  .G.NEWBURST.
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HP is also introducing a strategic partnership with Quest's
.i.NetBase; for the HP 3000. NetBase is a comprehensive
networking and data management solution that allows a
network of HP 3000s to work together as one large system.
NetBase is a key part of this high-end introduction because
it provides cluster-like capability, disaster recovery, and
more efficient use of computer resources across the network.
Provided by Quest Software, NetBase has five major services:
3   **Central Network Directory** provides access to databases
and files across a network without application changes
(discussed more under Configuration Management).
3   **Automatic Remote Process Management** allows simple
distribution of users to balance network loading (discussed
more under Configuration Management).
3   **Network Spooling** provides fast remote spooling with low
overhead (discussed under Operations Control/Job Management)
.
3   **Shadowing** (discussed more in Unit 7, High Availability)
maintains copies of databases and files on additional
computers without burdening existing processing.
3   **Statistics** (discussed under Performance Management)
provides a view of system utilization and performance to
allow application and network tuning.
                    .G.CP117.HPG;4.25";3.125";HPGL

.c. For the HP 9000**;**
.c.HP OpenView Network Node Manager;
HP .i.OpenView Network Node Manager; is an existing product
that manages complex networks of systems from one central
location. HP can now provide connectivity with existing
management schemes in mainframe environments, particularly
IBM's NetView, using several new third-party products:
  .G.NEWBURST.PCX   3 **Peregrine's .i.OpenSNA**; allows both an
;1.5";1.056";PCX   HP 9000 HP Corporate Business Systems to
                      act as the central management station
                      for both TCP/IP (SNMP) and SNA (VTAM)
                      networks. NetView's alarm and alert
                      information is forwarded to HP OpenView
                      for display and management.

  .G.NEWBURST.
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3   Also for the HP-UX environment, **Brixton System's .i.
BrxOpenView**; facilitates communication between OpenView and
NetView, IBM's central management facility. BrxOpenView
converts OpenView events into SNA alerts and transmits them
to NetView for logging and analysis. BrxOpenView runs as an
HP-UX application, allowing IBM network operators to monitor
and control LANs managed by HP OpenView.
  .G.NEWBURST.
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;1.5";1.056";
PCX

3   **.i.Peregrine Network Management System**; (PNMS)
automates network administration and help-desk functions
with integrated problem, change, inventory, configuration,
and financial management applications.
.c.Performance Management;
Effectively managing systems resources is particularly
critical in high-end systems. Customers coming from a
mainframe environment expect that sophisticated performance
tuning and management tools are available.
.c. For the HP 3000 and HP 9000**;**
HP provides a wide array of products for performance
management. The following have new features:
HP GlancePlus
HP .i.GlancePlus; is an easy-to-use tool for monitoring
current system performance activity, and for isolating and
resolving performance bottlenecks.
For the HP 3000, **HP .i.GlancePlus/iX**; has just been enhanced
to include an expert system for performance analysis.
HP LaserRX
HP .i.LaserRX; collects historic system performance data and
provides a graphic or tabular view of the data.
A new feature now allows the data to be viewed on either a
PC or a host HP 3000. This enables customers to have very
detailed mainframe-class reporting data that can be used for
charge-back purposes.
RXForecast
While no new functionality has been added to **.i.RXForecast**;
, it is an integral part of HP's performance management
offering. RXForecast uses data gathered by LaserRx and
statistical forecasting to predict future computing capacity
requirements.
HP LaserRX, RXForecast, and GlancePlus are standard with HP
3000 CS DX systems.
HP PerfView

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HP .i.PerfView; is a powerful new tool for managing the
performance of large numbers of systems in a distributed,
multi-vendor environment. HP PerfView has numerous
outstanding features, including:
3   HP PerfView uses management-by-exception techniques to
quickly identify and resolve existing and potential problems
before systems and networks are affected.
3   HP PerfView integrates with HP .i.OpenView Network Node
Manager; to provide a graphical map of the environment,
highlighting situations that require attention.
3   HP PerfView also integrates node-specific analysis
tools like HP .i.GlancePlus; and .i.LaserRX;.
HP PerfView is very significant for high-end customers
because it enables the manager to set predefined performance
parameters. If a predefined limit is exceeded, the operator
is notified.
HP PerfView enables complete "end-to-end" performance
analysis. That is, it facilitates USER-based performance
management -- using a performance metric that users care
about (such as response time). Ultimately, this is how MIS
shops are evaluated: Did they meet their users'
expectations?
Some performance tools fall short of this approach by only
measuring a component of the system, such as CPU utilization
or I/O efficiency. Users think of performance in terms of
whether or not the system resources they need are available
to them in a timely manner, hence the benefit of being able
to set predefined thresholds which must not be exceeded.
NetBase Statistics
The **.i.NetBase Statistics**; feature captures statistics about
file, database, and process-level activities. This aids in
uncovering application inefficiencies.
.c. For the HP 9000**;**
.c.CA-UNICENTER Performance Tools**;**
.i.CA-UNICENTER for UNIX; includes performance management
tools within its integrated systems management solution. The
performance monitor identifies bottlenecks and measures
resource utilization. This product, available from Computer
Associates, is based on mainframe systems management tools
in use today from CA.
.c.Storage Management;
Because of the increased capacity of the high-end systems,
the ability to manage data becomes even more critical.
Maintaining up-to-date backups is a standard requirement
which must be met through quick and efficient tools.
.c.Backup/Restore;

Both the HP 3000 and HP 9000 offer powerful backup and restore utilities.
.c.For the HP 3000;
HP TurboSTORE/iX and TurboSTORE/iX II
HP .i.TurboSTORE/iX; and **.i.TurboSTORE/iX; II for MPE/iX** provide fast, unattended, online backup with up to eight parallel devices. TurboSTORE includes a "fast-search" feature for use with DDS devices, support for optical disk libraries, and two kinds of data compression, which enable backup of up to 35 Gbytes/hour.
.c.For HP 9000;
HP OmniBack and OmniBack/Turbo
HP .i.OmniBack; and .i.OmniBack/Turbo; for HP-UX provide fast unattended, central backup and recovery from any system on a local network. It is the fastest UNIX backup solution in the industry--up to 24 Gbytes/hour with OmniBack/Turbo. Integration with major RDBMS (Oracle and Allbase) or disk mirroring provides on-line backup functionality.
.c.The Future;
In the **second half of FY92**, both TurboStore/iX II and OmniBack/Turbo will support 3480-compatible tapes.
.c.Tape Management;
Tape management solutions (provided primarily by third parties) address all aspects of tape usage and control.
.c.For the HP 3000;
For MPE/iX, two solutions, **.i.OCS TAPE;** and **.i.UNISON TAPES;** are especially significant to high-end customers because they utilize the IBM labeled tape format.
.c.For the HP 9000;
For HP-UX, **.i.CA-UNICENTER** provides mainframe-class tape management capabilities.
.c.Disk Management;
Disk management solutions automatically determine which files must be retained and which must be discarded. Both the HP 3000 and HP 9000 utilize third-party products to provide analysis and management of disk space, including data migration and recovery tools.
Various **database management administration** capabilities are provided by HP and third parties. (See Unit 8, High-End Information Management and Application Development.)
.c. Operations Control/Job Management**;**
Customers who are familiar with using large systems or mainframes expect to utilize the systems for batch jobs in addition to OLTP. Efficient job scheduling and job management tools are common requirements in large data centers.
We offer several solutions inherent in the operating system, plus third-party solutions.
.c. For the HP 3000**;**
.c.MPE/iX JCL**;**
.i.MPE/iX JCL; (Job Control Language) facilitates batch job scheduling and execution. In addition, MPE/iX supports up to five distinctive processing queues, which handle the execution priority.

.c. NetBase Auto RPM**;**
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.i.NetBase; for MPE/iX provides automatic remote process management. This feature can be used for load balancing by moving an application from an over-used system to an under-used system elsewhere on the network.
.c. NetBase Spool**;**
  .G.NEWBURST.
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;1.5";1.056";
PCX

NetBase also includes support for network spooling. This allows the cost of a system printer to be amortized across multiple systems.
.c. For the HP 9000**;**
The following solutions are available for the HP-UX environment:
.c.CA-UNICENTER;
.i.CA-UNICENTER; **for HP-UX** provides automated production control for workload balancing and batch queue management**.**
.c.HP OpenSpool/ UX**;**
.i.HP OpenSpool/UX; is a standards-based networked spooler for HP-UX. It brings high-end commercial spooling capabilities to the UNIX environment.
OpenSpool/UX allows the cost of a system printer to be amortized across multiple systems.
.c. The Future**;**
For **the future**, we realize that operations control and job management are areas where additional solutions are required to provide a robust job management capability. We are currently evaluating third-party solutions to address this issue.
.c.Configuration Management;
Both the increased number of users on high-end systems and the integration of those systems within existing environments create a critical need for tools to configure and centrally manage the systems.
.c. For the HP 3000 and HP 9000**;**
.c.HP OpenView DTC Manager;
HP .i.OpenView DTC Manager; for both HP-UX and MPE/iX enables the operator to centrally manage local and remote terminal connections. The operator can dynamically add, delete, or modify DTCs and/or terminals in a networked environment. This increases system uptime as well.
.c. For the HP 3000**;**

.c. NetBase Central File Directory**;**
 .G.NEWBURST.
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.i.NetBase Central File Directory; transparently maintains a centralized directory of all files and databases that are available to network users. When an application accesses a file or database, NetBase checks the directory and sends the request to the appropriate machine.
.c.Security;
Preventing and monitoring unauthorized and uncontrolled access to system resources is typically a major concern for high-end customers. When there are a large number of users on the system and large amounts of data, any breach in security can be very detrimental.
.c. For the HP 3000**;**
Inherent within MPE/iX are security features which exceed C2-level functionality. Some that are especially useful in commercial environments include ACDs, password aging, and idle session or application termination. Idle session termination enables automatic disabling of a workstation that has been left idle for a specified amount of time, preventing unauthorized personnel from using an unattended workstation.
.c. For HP 9000**;**
HP-UX also exceeds C2 functionality. Key enhancements include protected password database, access control lists, and auditing. A B1 level of HP-UX is also available. B1 is typically used in defense or government agencies requiring multi-level sensitivity security.
In addition to the security built into the operating system, there are several third party solutions that enhance the security of the HP-UX environment. Two of particular significance to high-end customers are:
.c.Security Check;
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.i.Security Check; from Raxco is a recognized security assessment and management package available on HP-UX systems. It is frequently used in high-end and data center environments and is the #1 security package sold into DEC VMS environments.
.c.CA-UNICENTER;
.i.CA-UNICENTER for HP-UX; includes a security system which provides global enforcement of system entry, asset access

control, periodic user password changes, and account supervision.

.c.Accounting;

Tools that allow data center managers to charge users for resource utilization are especially important to high-end customers. The billing function is critical because it actually provides funding for the MIS department. These tools enable MIS directors to show how they are "doing more with less," providing better services for each dollar spent. Solutions in this area for both MPE/iX and HP-UX are provided by third parties such as OCS, .i.CA-UNICENTER;, and .i.UNISON;. In addition, the new host-based data feature in LaserRX/iX facilitates easier access to data for charge-back purposes.

.c.Competition;

.c.Managing the Elements of Systems Management;

Where IBM "lights out" solutions exist, in an MVS/ESA environment it only means automating the already complex and expensive mainframe infrastructure. HP OpenView System Manager is a real advantage for managing remote sites.

.c. OpenView Beats NetView**;**

.i.IBM, competing against;'s current solutions consist of MVS/OCCF (Operator Communication Control Facility) and NetView. MVS/OCCF offers very limited functionality, providing only simplified remote console access, and only to MVS systems. .i.NetView;, IBM's network management solution, is not integrated with MVS/OCCF or with any other system and network product. HP's OpenView, on the other hand, provides integrated systems and network management. In addition, NetView is proprietary in nature, whereas OpenView is based on standards. And finally, NetView is implemented in a very costly manner, requiring mainframe support.

HP offers a more scalable systems and network management solution and is better positioned to manage heterogeneous centralized and distributed environments.

.c. Performance Management**;**

HP does not provide the same vast number of performance tuning and control facilities typically found in mainframe environments. However, since HP systems are less complex and more self-managing than mainframes, they don't NEED the constant tuning that's required for a mainframe.

.c. Single-Level Storage Access is Better**;**

MVS/ESA has a three-level storage access is less overall system throughput relative to the single-level storage access in MPE/iX. This again creates the need for MVS performance tuning products that are not necessary in the MPE/iX environment.

.c.IBM Applications Must Be Adjusted**;**

Mainframes are so expensive that it has been worthwhile historically for a customer to invest the time, people, and money to incrementally tune the system. Given how much the system costs, squeezing an additional 3% of performance gain out of the mainframe could represent a significant payback. HP's systems, on the other hand, are so reasonably priced

that many customers realize a savings by simply adding
another system if they need more performance. The "people
costs" associated with HP systems is much lower than those
required to maintain an IBM mainframe.
Compared with performance tools available on AIX, HP's tools
provide much more functionality (such as network performance
monitoring).
The bottom line is that performance management is not a
strength that HP should lead with when competing with
mainframes. However, performance measurement and monitoring
tools are major HP strength when competing with other
midrange or mainframe alternative solutions. Your job will
be to convince mainframe customers who think they need
mainframe-like performance tools that HP environments reduce
the need for such tools.
.c. Configuration Management**;**
IBM has only recently been able to dynamically reconfigure
disks and printers. Previously, only terminals could be
added on-line. (HP can add terminals and DTCs on-line.) On-
line changes to configurations are now possible on MVS.
IBM I/O controllers and devices can be added on-line using
ESCON, introduced in 1990. ESCON also allows for the use of
fiber optic technology.
IBM also offers automatic reconfiguration, for switching to
alternate device paths, and deconfiguring failed memory and
processor boards.
.c.HP's Simplicity is a Benefit**;**
HP's strengths lie in the more simple nature of the systems.
For both MPE/iX and HP-UX environments, for example, no
system programming is required.
HP also provides CD-ROM software distribution and customized
pre-loaded systems to ease (or eliminate) configuration
activity.
Relative to DEC, HP has an ease-of-use advantage with the HP
OpenView DTC Manager and HP OpenView System Manager.
HP, DEC, and IBM all offer similar functionality in software
change management.
.c. Accounting**;**
IBM's System Management Facility (SMF) collects data on all
system activities for accounting and performance purposes.
In addition, there are many third parties that provide
accounting solutions for IBM mainframes. While HP itself
does not offer the same level of functionality for
accounting purposes, it is important to remember that the
cost of buying and maintaining an HP system is dramatically
lower than a mainframe. Consequently, obtaining these tools
directly from HP has not been a strong customer need. The
functionality provided by our third parties is more than
adequate to do the job. This area should never be a show-
stopper.
.c. Security**;**
.i.DEC, security;, .i.Sequent, security;, and HP (both HP-
UX and MPE/iX) currently support C2-level functionality,

which is the level of security most commonly required by data processing environments.
HP supports several features that go beyond DoD C2 requirements and add extra value in a commercial environment.
AT&T, IBM's MVS environment, and HP-UX all offer a higher level of security (B1) that is commonly required only in high security DoD environments.
.c. Operations Control**;**
One of the key differences between MPE/iX and MVS/ESA is in the ease of operations. MPE/iX provides a much easier-to-use environment than MVS/ESA. MIS shops in an MVS/ESA environment have found they may need more than three times the staffing than in an MPE/iX environment. This is primarily due to the differences in design philosophies. MPE/iX was designed for OLTP applications with its single, integrated system architecture, so ease of use and ease of operation were simple to include.
.c. Job Scheduling**;**
Job scheduling is a common and regular function of most IBM systems, especially since they were designed for batch processing. Therefore, it is important to have a strong job scheduling function. In the IBM model, based on Job Entry Subsystems (JES), the system manager must manage and control the job scheduling tasks, and must be an expert. In the HP world, job scheduling is more "egalitarian." Systems are more self-managing, and the expert system manager resource is not necessary. HP's job scheduling capabilities are less complex and more cost effective. Because they are less complex, we don't have the level of queuing sophistication and granularity that IBM systems have.
In mainframe offload scenarios, emphasize that the HP system will be running fewer jobs than the mainframe, so the IBM level of control is not needed. In mainframe replacement scenarios, stress HP's cost effectiveness and overall ease of use.
.c. Output Spooling**;**
.i.IBM, spooling;'s spooling and printer control capabilities have more granularity and offer a greater degree of optimization than HP's. The customer, however, must keep additional staff to make use of the optimization tools that are available. For example, changes in printer configurations require system programmer involvement.
HP's systems do a low level of spooling optimization automatically, so additional resources are not needed. This is particularly relevant in mainframe offload scenarios, where the need for sophisticated printer control capabilities is lessened.
HP offers an additional benefit in that it supports PCL, the industry standard printer language. HP can convert IBM AFP printer language to PCL with the help of a third party (I-DATA).
.i.DEC, spooling; and their third parties provide spooling

functionality that is comparable to HP and HP third-party
solutions.

.c. Storage Management**;**

.c. Backup/Restore**;**

.i.IBM, storage management; is known for its ability to
quickly backup very large amounts of data. However, the HP
3000 offers on-line backup across all file types via
TurboSTORE/iX or Mirrored Disk/iX, and the HP 9000 provides
on-line backup with DataPair/800. IBM provides on-line
backup for databases only.

HP's offering is most competitive in mainframe-offload
scenarios. Although our solution is not as strong as IBM's
in a true mainframe-replacement situation, the customer
gains in terms of cost effectiveness and reliability.

HP offers a better choice of backup devices, from
inexpensive DDS to high capacity optical disk. This point
makes it easier to sell HP's unattended backup solutions
into more environments.

IBM is known for the strength of its Hierarchical Storage
Management (HSM). Solutions in this area are planned for
both MPE/iX and HP-UX. An "HSM on the HP 3000" white paper
will be available in Q3CY92.

.i.DEC, storage management; offers on-line backup only for
RDBMS databases (RDB). DEC does not offer multiple device
data storage capability.

.c. Disk Management**;**

HP's third-party solutions provide similar functionality to
.i.IBM, disk management;, although IBM has more experience
with disk configurations exceeding 100 Gbytes.

MVS tends to be less efficient than HP in using disks. This
increases DASD costs for IBM users and drives greater
interest on their part for disk management software.

.c. Tape Management**;**

Both MPE/iX and HP-UX support third-party solutions that are
comparable in functionality to those offered in the
traditional .i.IBM, tape management; mainframe environment.

.c.HP's Vision for the Future**;**

HP's vision for both the HP 3000 and HP 9000 is to become
the best provider of integrated, standards-based, self-
managing systems. We will provide integrated systems and
network management products.

HP will continue to build upon standards (specifically OSF's
DME) for future data center management solutions. In fact,
HP will provide the fastest path to DME by providing key
technology over time. The DME APIs (Application Programming
Interfaces) will be available in 1993, so developers can
create applications which will be DME compliant. HP's
software Distribution Technology (accepted by OSF as part of
DME) will be widely available on HP-UX systems in 1993. This
will enable an administrator to initiate and monitor
software installations and updates to multiple destinations
from a central location.

.G.CP114.HPG;4.25";4.25";HPGL

Our solutions will facilitate a lights-out environment. In
the evolution toward completely self-managing systems, we
will do everything possible to reduce:
3   Man-machine interaction
3   Probability of error
3   Inconsistency in user interfaces
Customers should be able to apply their MIS budgets to the
major MIS mission: data processing of corporate information
to create a competitive advantage. HP's goal is to make the
operation and management of the data center less and less
costly. Our systems will increasingly incorporate artificial
intelligence to be self-tuning, auto-configuring, and
proactive in systems management.

.Begin Table C.

.End Table C.