

HEWLETT-PACKARD

Migration

HP 3000

Sales Guide



Internal Use Only

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

HP Commercial Value - Added Supplier Edition

CONTENTS

CHAPTER 1. MIGRATING TO THE 900 SERIES: A STRATEGY THAT SELLS.	3
Key Benefits of Migration.	4
Who Can Migrate to the 900 Series	5
How Migration Sells the 900 Series	7
Comparing With Competitors' Migration Requirements	8
 CHAPTER 2. MOVING AN EXISTING HP 3000 TO A 900 SERIES SYSTEM.	 9
Compatibility Preserves Customer Investment.	10
Moving to a 900 Series Over a Weekend	11
Multiple Paths to High Performance	12
Using New Compilers to Attain Top Performance.	13
Improving Database Performance	14
Tailoring Migration to the Customer's Schedule.	16
Moving Rapid Applications to the 900 Series.	17
Minimum Investment in User Retraining	18
Transparent Networking	19
Cross Development of Applications	20
 CHAPTER 3. PLANNING FOR MIGRATION	 21
Ensuring a Smooth Migration for Your Customer	22
Do's and Don'ts for Customers	23
Evaluating a Customer's Migration Effort	24
Migration Tools to Assist Customers.	25
 QUESTIONS & ANSWERS	 27
 APPENDICES	
A. HP 3000 Language Compilers	29
B. Additional Sources of Information on Migration	30
C. Incompatibilities	



Forward

What This Document Covers

Migration of Customer Applications and Data

This Migration Sales Guide describes the migration of customer applications and data from current HP 3000s to the 900 Series. There is also a description of our Fast Start program which is helping third party vendors migrate their code to 900 Series systems.

The information in this document does not pertain to the migration of HP application software or peripherals. Please see the HP 3000 Support Matrices for availability of HP applications and peripherals on the 900 Series.

CHAPTER 1.

**MIGRATING TO THE 900 SERIES OF THE HP 3000:
A STRATEGY THAT SELLS!**

MIGRATION IS:

- * FAST**
- * EASY**
- * FLEXIBLE**
- * DEFINITELY WORTH IT!**

Migration Benefits - Key Points

Migration To The 900 Series Gives Improved Performance, Compatibility With Other HP 3000s, And Is Easy To Do!

HP's migration path allows HP 3000 customers to quickly benefit from the performance and capabilities of the new 900 Series systems! Customers will be happy to learn how simple and fast it is to migrate to the 900 Series. That's because 900 Series systems are compatible with the rest of the HP 3000 family.

Key Messages for Customers

There are four key points to remember when explaining migration to customers:

- 1) Customers can move their HP 3000 applications to the 900 Series without making changes or having to recompile programs.
- 2) With a minimum of effort (usually by simply recompiling), customers can get top

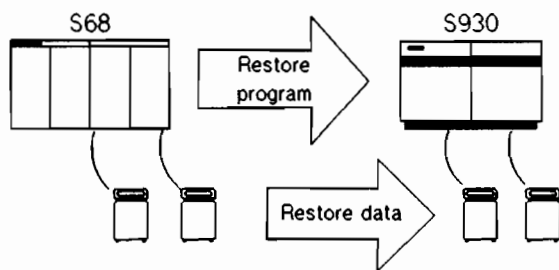
performance from their applications on 900 Series systems.

- 3) 900 Series systems communicate transparently with other MPE V/E HP 3000s in networks.
- 4) No major retraining is required for systems managers, operators or users.

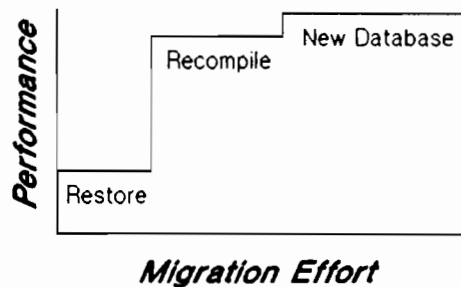
HP 3000 Investment Protected

This migration strategy protects your customers' investments in their HP 3000s. It means you can continue selling other HP 3000s, knowing that upgrading a customer to a 900 Series system in the future will be nearly as easy as upgrading HP 3000s has been in the past!

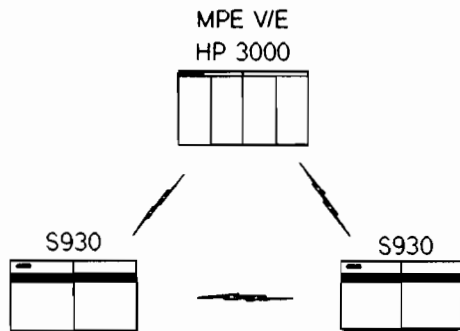
1) No Changes Required!



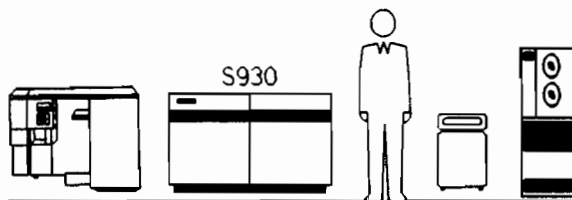
2) Top Performance - Minimum Effort!



3) Transparent Communications!



4) Minimum Retraining!



Who Can Migrate To The 900 Series?

900 Series Provides Upgrade Path for Entire HP 3000 Family

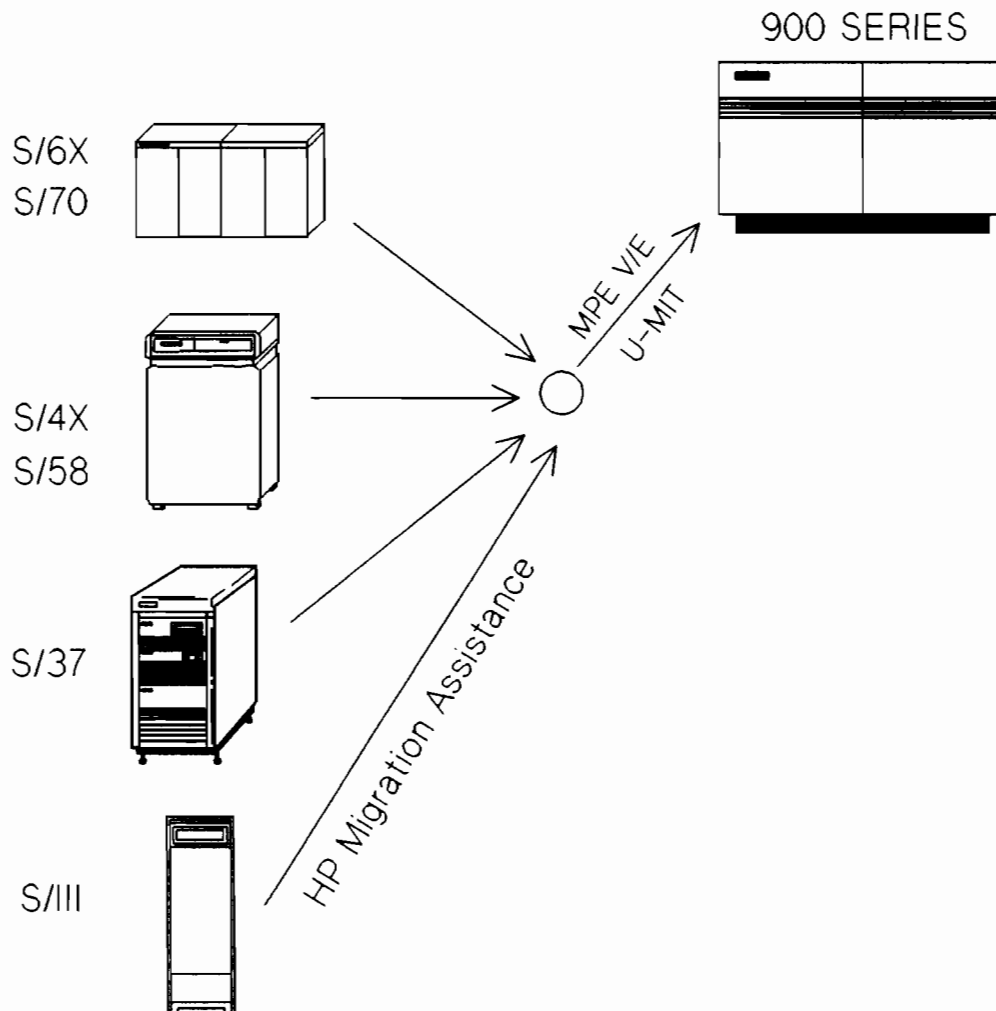
The 900 Series provides a compatible upgrade path for the entire HP 3000 family. The same migration paths hold for any current HP 3000 system, whether it is a Series 37/37XE, Series 4X, Series 5X, Series 6X, or Series 7X.

Given the compatibility between the 900 Series and the rest of the HP 3000 family, migrating to a 900 Series system will be very similar to the HP 3000 upgrades in the past; for instance,

customers will go through the same type of steps as upgrading from a Series 48 to a Series 68.

The only exception is the migration path from Series II/III/30/33 systems. Customers wishing to upgrade directly to a 900 Series system from these systems will need to use HP assistance. This is required because they will need to migrate their systems to MPE V/E based software first.

COMPATIBLE UPGRADE PATHS TO 900 SERIES



Things to be Aware of

Phased Availability of HP Applications

Because the availability of HP application software for the 900 Series will be phased over time, some of your customers may not be able to move all their HP applications to the Series 930 when it first ships. For instance, HPDeskmanager will not be supported at first release, so systems relying on this application would not make good upgrade candidates initially. Similarly, peripheral support will be phased and a few peripheral configurations may never be supported. For example, multipoint terminals will not be supported, so customer applications depending on them could not be moved without modification. Please consult the Application Sales Guide and the Series 930 Update to the HP 3000 System Configuration Guide to see which HP applications and peripherals will be supported at first release. (Also listed in the HP 3000 Support Matrices.)

Move to U-MIT First

Before upgrading to a 900 Series system, your customer must first update their systems to MPE V/E based U-MIT software. This is because MPE

XL software is compatible with U-MIT. Individual applications, however, can be moved to the Series 930 regardless of the operating system version on which they were developed.

Move to Latest Versions of Languages

In order to achieve top performance on the 900 Series, customers will also want to move to HP FORTRAN 77/XL, HP Business BASIC XL, and from SPL to a higher level language. Applications written in FORTRAN/3000, BASIC/3000, and SPL can move to the 900 Series, but will not achieve the optimum performance potential. (See "How Top Performance is Achieved" chapter 2.)

Additional Disc Space Required

Due to the new method used for file space allocation, which provides higher file system performance, there will be additional disc space required for an existing system moving to a Series 930. Estimates range up to 10% more. In addition, if a customer moves to the new 900 Series database, HPIMAGE (described in chapter 2), between 25 to 100% more space could be required depending on the customer's database structure. (See Systems Performance Overview for more details.)

SOFTWARE REQUIREMENTS

To Migrate

TurboIMAGE
Network Services/3000

For Best Performance

FORTRAN/3000 --> HP FORTRAN 77
BASIC/3000 --> HP Business BASIC
SPL --> HP Pascal

How Migration Sells 900 Series Systems

Migration Strategy Answers Customer Concerns About Upgrading To The 900 Series

Customers will naturally have concerns about migrating to a new architecture HP 3000. In 900 Series sales situations where migration becomes

an objection, you can use the migration strategy as a selling strength. Here are some answers to some of the most frequently heard concerns from customers.

UPGRADING TO S930 CONCERNS	MIGRATION STRATEGY RESPONSES
• Don't want to go through a large conversion effort • Large IMAGE databases on HP 3000s • Investment in 3000 networks • Will have to retrain staff • Can't migrate all applications at once • I do centralized application development on an HP 3000 for all of my systems • I hear compatibility mode performance on competitive systems is bad. Is this the case with the 900 Series? • I have a lot of programs in SPL. Can I move these? • Is migration worth it?	• 900 Series is compatible with other HP 3000s • Can move TurboIMAGE databases w/out making changes • Communicates transparently • Minimum retraining required • Can migrate in phases • Can do same on 900 Series system for rest of HP 3000s • Compatibility mode performance on a S930 equals a S68 and can be increased up to 15% with a simple tool • Yes, can continue to run and modify SPL programs on 900 Series, but can't get optimum performance from them • Can achieve up to 2X a S68

The Competition's Migration Requirements

HP Sets Industry Milestone For Easy Migration

HP has developed a migration strategy that is unique in the industry for its ease, flexibility and extent of compatibility. When explaining the

migration effort to customers, here are some competitive reference points which demonstrate HP's leadership.

Migration Requirements	S37-S70 HP3000 to 900 Series System	IBM 4300 DOS/VSE to 4300 MVS	IBM S38 to S4300	IBM S36 to S38	DEC PDP-II to VAX/VMS
Timeframe to Operational	2-3 days	12-18 months	9-12 months	3-6 months	2-3 days
Ability to Phase Migration	yes	no	no	no	yes (compability mode provided)
Retraining Required (Operating Environment Similarity)	minimal	substantial new - syntax - commands - backup - interface	substantial new - syntax - commands - backup - interface	substantial new - syntax - commands - backup - interface	moderate
Program Conversion Required	none for non-privileged mode applications	▪ none for high level languages ▪ rewrite JCL required	▪ rewrite applications for database access ▪ rewrite RPG	▪ rewrite RPG to RPG II	relinkage of programs required
Data Conversion Required	no	no	yes	yes w/ conversion aids	no
Network Compatibility	yes	possible with substantial effort	possible with substantial effort	yes	yes
Cross Development of Applications Possible	yes	no	no	no	yes but final debug & testing has to be done on VAX
Consultant Necessary	possible without consultant with documentation & conversion aids	yes knowledge of MVS required	yes	possible without consultant with documentation & conversion aids	possible without consultant with documentation & conversion aides

CHAPTER 2

MOVING AN EXISTING HP 3000 SYSTEM TO A 900 SERIES SYSTEM



**900 SERIES COMPATIBILITY ASSURES MINIMUM
EFFORT AND OPTIMUM PERFORMANCE -
UP TO TWO TIMES A SERIES 68!**

Total Compatibility

900 Series Compatibility Preserves Customer Investment In the HP 3000

Compatibility across the HP 3000 product line has been a fundamental element of HP's commercial system strategy and will continue to be in the future. This commitment to lasting value is the cornerstone of the migration path to the 900 Series. It ensures that your customers' investment in HP 3000 software and hardware will be protected.

Some of the benefits to customers are:

1. Compatibility of applications for customers upgrading from existing HP 3000s to 900 Series systems.
2. Increased performance from the 900 Series architecture (with minimum effort).
3. Transparent communications within HP 3000 networks.

4. Minimal retraining since the operating environment is like other HP 3000s.
5. Ability to develop applications and run them across the product line, from the Series 37 to the Series 950.
6. Continued compatibility across all 900 Series systems.

Because of these features, existing HP 3000s will continue to be upwardly compatible with the 900 Series through the 1990's. This is important since there are many sales situations where a 900 Series class system is not required, and another HP 3000 best fits a customer's needs. Such opportunities are strengthened by having a compatible growth path to 900 Series systems which these customers can easily pursue in the future.

900 Series Compatibility	
Features	Benefits
+ Object Code Compatibility	+ No Changes Required
+ Source Code Compatibility	+ High Performance
+ Database Compatibility	+ No Lengthy Conversion
+ VPLUS Compatibility	+ No Changes Required
+ Operational Compatibility	+ Minimum Retraining
+ Network Compatibility	+ Transparent Communications
<i>= Total Compatibility</i>	<i>= Ease of Migration</i>

Moving Up To The 900 Series

Most HP 3000 Customers Can Move To A 900 Series System Over A Weekend

Object Code Compatibility

An MPE V/E U-MIT based HP 3000 system can be moved to a 900 Series system over a weekend because no changes are required to applications or data. This is because the 900 Series has object code compatibility with MPE V based HP 3000s. As a result, a 900 Series system can run existing HP 3000 object code without the need for modification, recompilation or data conversion.

Consequently, all that is required to run non-privileged mode applications is a simple store/restore of the applications and data. (Note: databases must be in TurboIMAGE format to run on the 900 Series.) Restored applications can access data moved to a 900 Series system or data existing on other HP 3000s in the network, including databases (IMAGE or TurboIMAGE), KSAM files, and MPE files.

NOTE: Customers should be able to move their own applications and data to a Series 930 over a weekend. This timeframe does not include the ability to move the HP applications and peripherals which are not supported at first release. (See Applications Sales Guide and Series 930 Update to HP 3000 System Configuration Guide.)

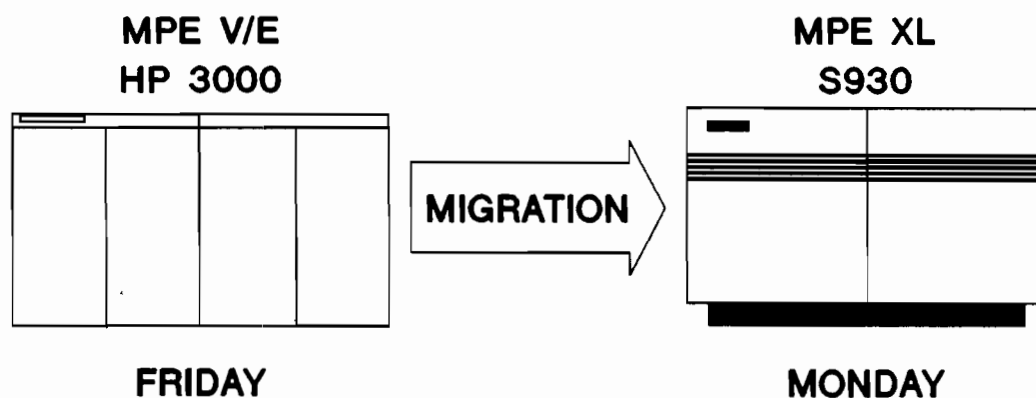
Compatibility Mode

Once a customer's application has been restored, the application will be executing in "Compatibility

Mode." This is a run-time environment which interprets a sequence of MPE V/E HP 3000 machine instructions and executes the corresponding sequence of 900 Series instructions while providing access to the callable intrinsics available on the rest of the HP 3000 family. This environment provides the same capabilities and limitations which exist on MPE V/E systems today. Applications executing in Compatibility Mode will achieve about the same performance as they do on a Series 68. (See next page for steps to improving performance further.) **Compatibility Mode is provided on the 900 Series so customers can move their systems over with little effort. They can gain confidence in their new system before recompiling a single program.**

A Few Exceptions

There are naturally a few exceptions to object code compatibility, most of which are rarely encountered. Applications which use undocumented intrinsics, execute in privileged mode, call routines that require privileged mode, or use privileged mode machine instructions may need to be modified before moving to a 900 Series system. Additionally, there are a few MPE intrinsics which may require source changes if they access hardware dependent information. These and several other object code incompatibilities are mentioned in "Questions & Answers" and explained in detail in Appendix C.



Performance! Performance!! Performance!!!

Multiple Paths to High Performance

Once their new 900 Series systems are up and running, your customers will want to know how to achieve the performance the 900 Series has to offer. There are several possible migration paths for applications. These paths require different levels of effort and result in varying improvements in performance.

Compatibility Mode

STEP 1: STORE/RESTORE: After restoring applications and data to Compatibility Mode on a Series 930, applications will have about the same performance they would on a Series 68.

STEP 2A: OBJECT CODE TRANSLATOR: To improve performance within Compatibility Mode, customers can use HP's Object Code Translator. This utility raises performance up to 15% over a restored program's performance and takes about the same amount of effort as recompiling. It can be used to increase the performance of programs which cannot be recompiled, such as SPL programs.

Native Mode

In order to achieve top performance on the 900 Series, customers should move their software to a second environment, known as "Native Mode". Based on 32-bit instructions, this is the most

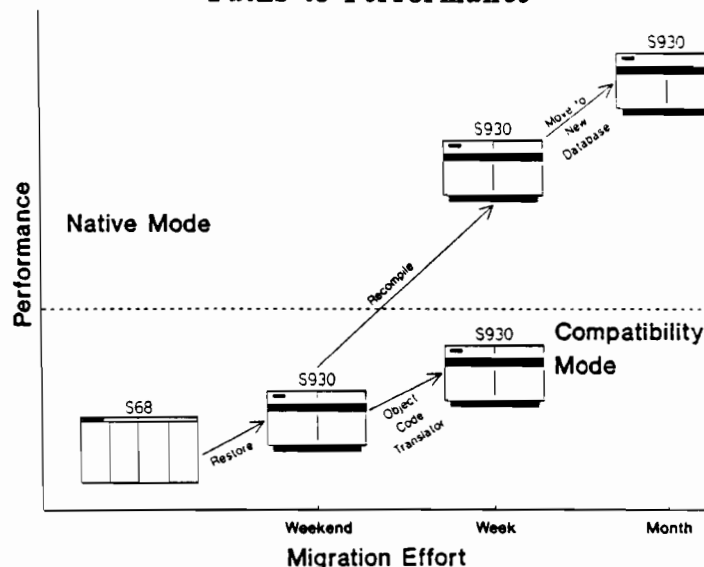
efficient way of accessing the full power of the 900 Series architecture.

STEP 2B: RECOMPILE: To move to Native Mode, an application is recompiled with the optimizing compilers available on 900 Series systems. Most customers will be able to recompile the applications on a typical system within a period of four to six weeks and achieve performance on a S930 of up to 1.4 to 1.9 times that on a Series 68.

Mode is Transparent to User. Programs running in Compatibility and Native Modes can execute simultaneously on the same system. Modes are switched automatically when appropriate by MPE XL.

STEP 3: ALLBASE: To achieve even higher performance, customers can move to the HPIMAGE interface of ALLBASE, the new IMAGE database management system created to take advantage of the 900 Series' new architecture. When using TurboWindow, this usually requires no source code changes and can often be done within a few days. Resulting database applications' performance on a S930 can be up to two times that achievable on a Series 68. If HPIMAGE is accessed directly, new features and some additional performance gains are possible. (See Data Management Sales Guide for additional information on database products.)

Paths to Performance

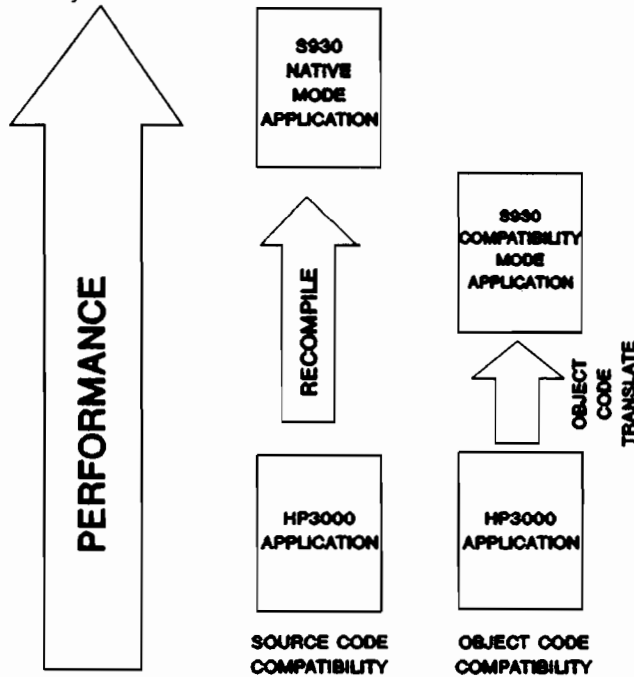


How Top Performance Is Achieved

Using New Compilers To Attain The Best Performance

Source Code Compatibility

An existing application can be recompiled to top Native Mode performance because 900 Series compilers have been designed to have source code compatibility with the rest of the HP 3000 family.



Native Mode Compilers Source code compatibility allows the use of optimizing Native Mode compilers to recompile customers' HP 3000 source code in order to take advantage of the native features of the 900 Series' architecture. This provides the best performance achievable by efficiently accessing the power of the new architecture. Source code compatibility applies to applications written in high-level languages - COBOL II, Business BASIC, FORTRAN 77, Pascal, RPG and Transact. Native Mode compilers which will be available when the 900 Series first ships include those for COBOL II, HP FORTRAN 77, and HP Pascal. Those for HP Business BASIC, RPG, Transact and "C" will be available after first release.

Customers who want to start preparing now for top performance on a 900 Series system should move from FORTRAN/3000 to HP FORTRAN 77

and from BASIC/3000 to HP Business BASIC on their current HP 3000.

A Few Exceptions

There are a few exceptions to source code compatibility, the most important of which impacts SPL applications. SPL applications will run on the 900 Series in Compatibility Mode, but they cannot be recompiled to achieve Native Mode performance. (If an application written in a high level language calls SPL procedures, it can still be recompiled into Native Mode and call the procedures in Compatibility Mode. See Appendix C for special programming requirements.) SPL is so dependent on the MPE V HP 3000 architecture that a Native Mode compiler could not be produced. Consequently, we created the Object Code Translator (described below) so that SPL applications could achieve higher levels of performance without having to be rewritten. However, if a customer wishes to move an SPL application to the top performance of Native Mode, it should be rewritten in Pascal. Customers needing low level system programming capabilities may prefer to use "C" which will be available in Native Mode on a future release. Other, more infrequent source code incompatibilities can be found in Appendix C.

For Those Without Source Code ...

HP's new Object Code Translator can be used for increasing the performance of applications within Compatibility Mode. This can be used for any object code, including SPL applications or for applications whose source code has not been retained. Estimates show that the Object Code Translator improves performance up to 15% over that of a restored program. It works by reducing the amount of overhead required to emulate MPE V/E HP 3000 machine instructions, and it takes about the same amount of effort as recompiling. The Object Code Translator does, however, increase the size of the translated program file by several times.

Improving Database Performance

Getting The Best Performance With Image Applications - Step 1

Moving Database Applications. Due to object code compatibility, TurboIMAGE database applications can be moved to 900 Series systems without modification or recompilation. Therefore, database operations need not be interrupted for more than the weekend's time it usually takes to install the 900 Series system and restore the programs to it.

Moving Databases. Databases must be in TurboIMAGE format to run on the 900 Series, so customers still on IMAGE/V (previously known as IMAGE/3000) should move to TurboIMAGE before upgrading to the 900 Series. This move is quite simple since no changes are required to IMAGE/V applications, and a fast and easy to use utility is provided to automatically convert the databases to TurboIMAGE format. The Turbo conversion utility will also be available in Compatibility Mode so conversion can be done after the databases have been restored to the 900 Series. Database applications which have been restored to a 900 Series system can continue to access databases on other HP 3000s, even if they are IMAGE/V databases!

Improving Database Performance. Since most HP 3000 customers' applications are database applications, a TurboIMAGE application is a good example to use to demonstrate the steps

customers can take to go from Compatibility Mode to top performing Native Mode. Assume we have TurboIMAGE on an MPE V/E based HP 3000 and on a new Series 930.

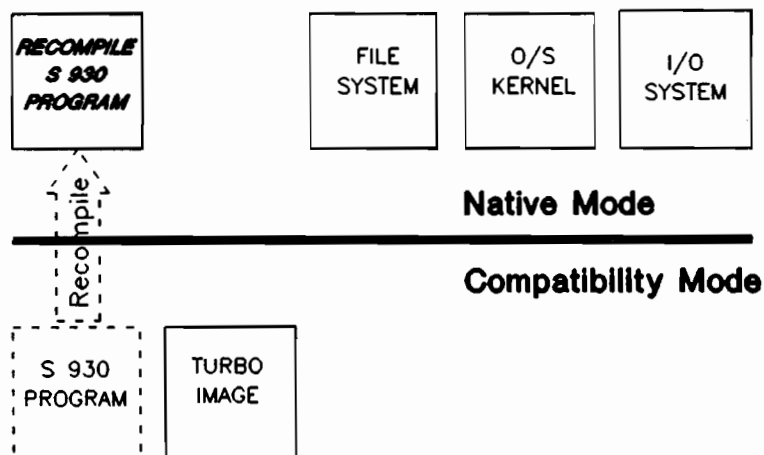
A. ACTION: STORE/RESTORE Program A and data from MPE V/E HP 3000 to S930. No changes necessary. **TIME REQUIRED:** Average 10 minutes per program. Between 1-2 hours for data, depending on database size.

RESULT: Program A is running in Compatibility Mode, accessing TurboIMAGE in Compatibility Mode. Program's performance is about the same as on a Series 68.

B. ACTION: Recompile and Prep Program A with a Native Mode compiler and the Native Mode linker supplied by HP. **TIME REQUIRED:** Average 10-20 minutes for average program (1500- 2000 lines of code). (Testing time not included.)

RESULT: Program A is running in Native Mode, accessing TurboIMAGE in Compatibility Mode. Program's performance is up to 1.4 to 1.9 X a Series 68.

Step 1: Recompile For Improved Performance



Improving Database Performance

Getting The Best Performance With IMAGE Applications - Step 2

ALLBASE - Includes New Native Mode IMAGE

Customers can attain even better performance from database applications through a second step - moving to the HPIMAGE interface of ALLBASE, the new database management system written in Native Mode. ALLBASE is a multithreaded database with both HPIMAGE and HPSQL relational interfaces, designed to provide optimum performance, functionality and recoverability on the 900 Series architecture.

An Easy Move

For the majority of TurboIMAGE applications, no source code changes are required to move them to HPIMAGE with TurboWindow. TurboWindow provides compatibility by mapping the TurboIMAGE database environment to the new HPIMAGE interface of ALLBASE. Minor changes are needed only if a program uses features not supported by HPIMAGE and TurboWindow. These few features are listed in Appendix C. Data can be automatically converted to HPIMAGE ALLBASE format with an easy to use utility, called DBMIGRATE, and the HPIMAGE LOAD utility.

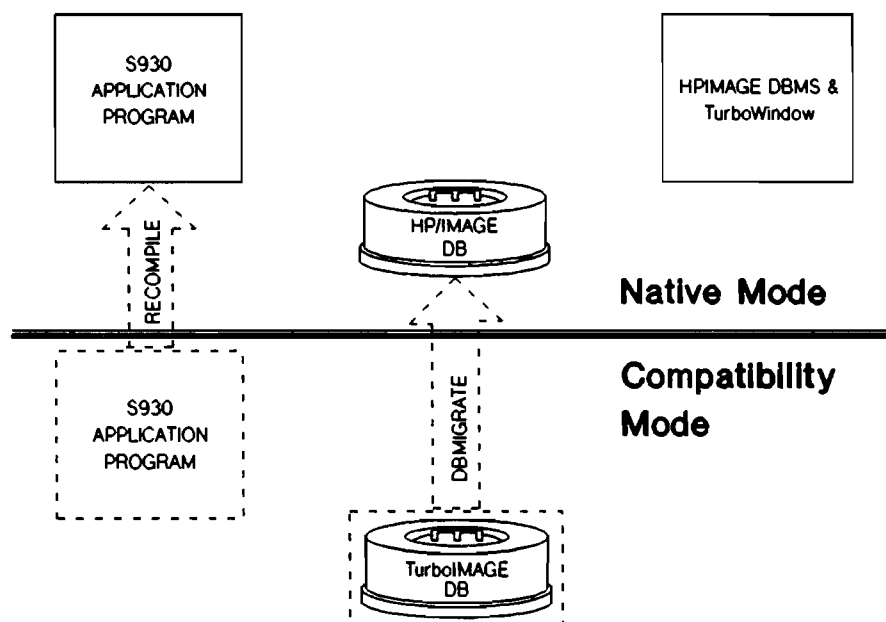
ACTION: Move to Native Mode version of IMAGE: HPIMAGE and TurboWindow. Move TurboIMAGE data files to ALLBASE data files using DBMIGRATE. Modify schema using supplied automatic utility.

TIME REQUIRED: A matter of hours depending on the size of the databases.

RESULT: Application program, data and database management system are all in Native Mode, providing top performance possible. Application's performance on a S930 can be up to 2X a Series 68. With TURBOWindow, recompiled programs can still access TurboIMAGE databases existing in Compatibility Mode. They can also access TurboIMAGE or IMAGE/3000 databases on other HP 3000s via Remote Database Access.

The customer is now getting the best performance possible on the 900 Series since the program, database and database management system are all in Native Mode.

Step 2: Move to HPIMAGE and TurboWindow for Best Performance



Tailoring Migration To The Customer's Schedule

Migrating Applications Can Be Done In Phases

In order to allow customers to be productive with their new 900 Series systems from the start, we've eliminated the necessity of recompiling all applications and migrating all databases at once. Customers can get their systems up and running quickly in Compatibility Mode, and then move programs to Native Mode at their convenience. For instance, the most frequently run applications can be transferred first to Native Mode for higher performance, while the rest remain in Compatibility Mode. Programs which have been moved to Native Mode can access databases existing in Compatibility Mode and those programs remaining in Compatibility Mode can access databases which have been converted to Native Mode. Programmers of Compatibility Mode applications intended to access Native Mode databases should be aware of the list of database coding conventions in Appendix C.

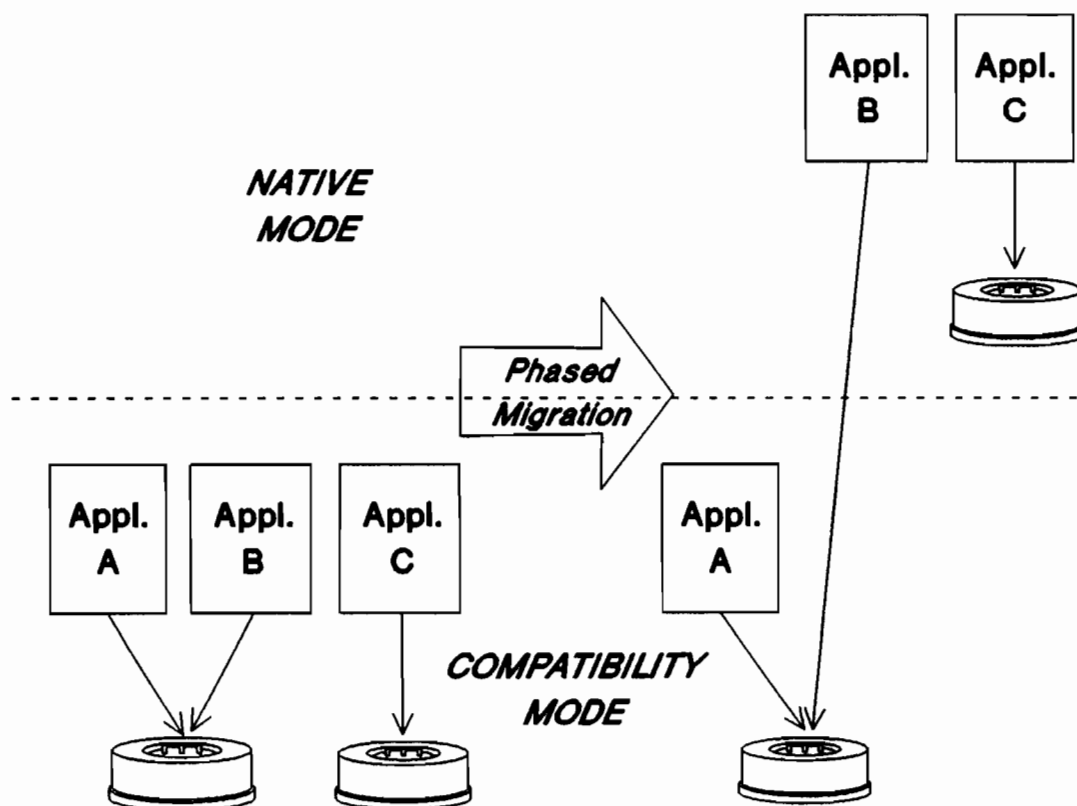
For Example.....

An example is illustrated below. Consider a customer who has moved three applications to a

900 Series system. They are running in Compatibility Mode. Programs A and B share the same database. Suppose program A is written in SPL and cannot be recompiled to Native Mode. The customer can recompile programs B and C, moving C's database to Native Mode, and leave program A (and the shared database) in Compatibility Mode. (This database can also be moved to Native Mode if desired.)

Consequently, customers can recompile applications written in high level languages (for which Native Mode compilers are available) in order to obtain Native Mode performance without having to wait to rewrite privileged mode or SPL programs so that they can be recompiled. And the databases can be shared by programs in either mode!

For best performance, customers will want to eventually move all their applications to Native Mode.



Rapid

Moving Rapid Applications to the 900 Series

Moving to Compatibility Mode

Moving Rapid applications to a 900 Series system is as easy as moving database applications. Customers will simply Store/Restore their Rapid applications, the dictionary (Dictionary/V)* they access, and any associated data files. No changes are required. (*Note: Products which previously carried the suffix "/3000", like Dictionary/3000, have been renamed with a suffix "/V" to designate that they are designed for MPE V based HP 3000 systems and for Compatibility Mode on the 900 Series. Products with the suffix "/XL" have been designed for use in Native Mode on the 900 Series.)

When the Series 930 first ships, the Rapid products (Transact, Report, Inform) will be available in Compatibility Mode. Within a year after first shipment, Transact, a new Report facility, and an Inform product will become available in Native Mode.

Compatible with TurboIMAGE and HPIMAGE

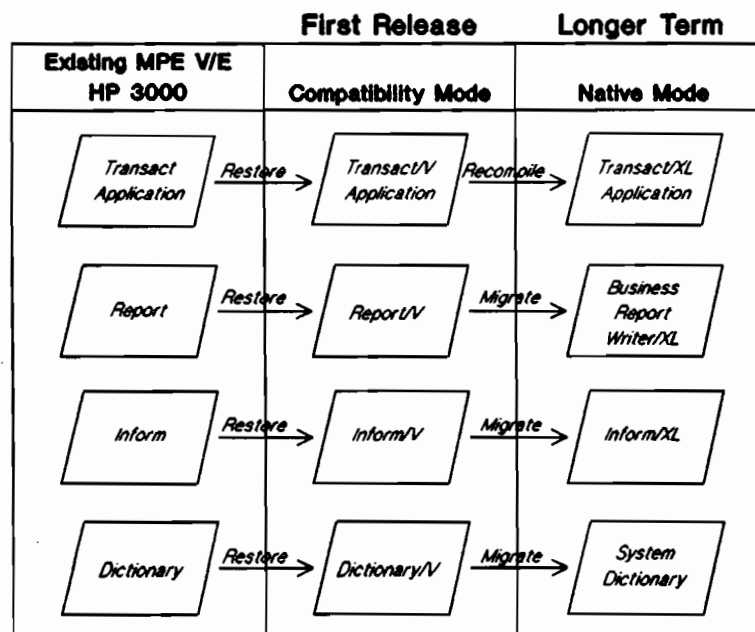
Since many customers may want to migrate their TurboIMAGE databases in phases to Native Mode performance, we have designed Rapid to support both TurboIMAGE and HPIMAGE through

TURBOWindow. Rapid applications can access data from either format with no modifications to the applications or dictionary (as long as no structural changes have been made to the database structure converted to HPIMAGE).

Moving to Native Mode

As Native Mode Rapid products become available, Rapid applications will be able to take advantage of the performance achievable in Native Mode. Before moving to Native Mode, customers will need to migrate first to System Dictionary. An HP utility will move the contents of of Dictionary/V to System Dictionary. For information on Dictionary migration, see the System Dictionary Sales Guide.

Transact applications can move easily to Native Mode with the use of a new compiler which will be available within the first year after the Series 930 first ships. The Native Mode Report facility will be provided by the new Business Report Writer(BRW), a powerful, high performance report writing system. A compiler and processor will be provided with BRW to execute reports accessing IMAGE and TurboIMAGE databases as well as MPE and KSAM files. Longer term, there will be a new Inform product to run in Native Mode called Inform/XL.



Operational Compatibility = Low Investment In Retraining

Users Already Know How To Interact With The 900 Series

System managers, operators and end users will interact with 900 Series systems in very much the same way they do today with other HP 3000s. Its operating environment is so similar to that of other HP 3000s, customers will not have to provide major retraining for their employees. System managers and operators will be able to manage and operate both the 900 Series systems and the rest of the HP 3000 family at the same time.

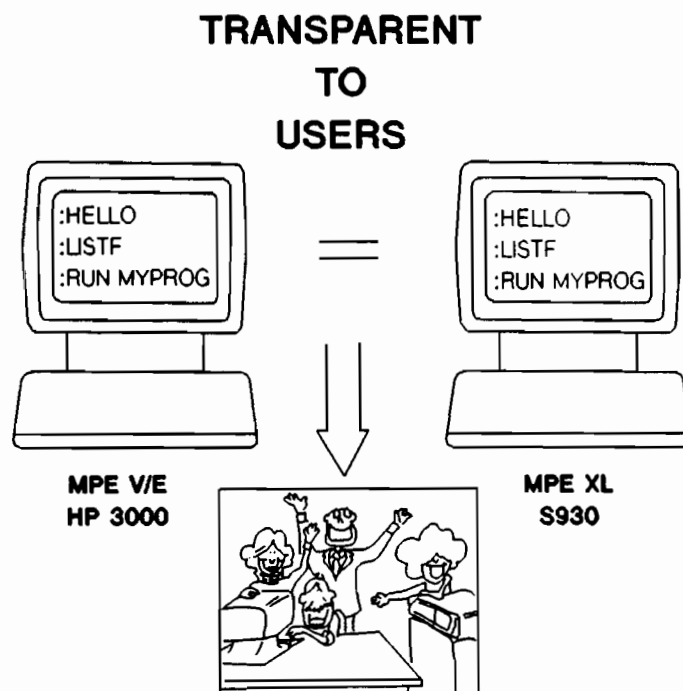
MPE XL is a Compatible Superset of MPE V/E

This is accomplished because MPE XL is a compatible superset of MPE V/E. The commands and intrinsics of MPE XL look exactly like those of MPE V/E, with the exception of some additional functionality and ease of use features, including concurrent backup and on-line configuration of terminals. **System managers, operators and applications developers can learn these within a couple of days. End users need learn nothing new at all.**

Also, MPE XL's accounting structure and security features appear exactly the same as those of MPE V/E. System Managers will set up accounts, create new users, and perform backups the same way they do today. As with MPE V/E, they can determine the system capabilities to which specific users have access, and users can determine whether others can read and write to their files.

Mountable System Volumes

MPE's private volume facility has been greatly enhanced on MPE XL to make disc volume set management more transparent to users, programmers, and operators. Commands that manage private volumes under MPE are forward compatible to MPE XL, but are no longer needed in most cases.



Networking With The 900 Series



The 900 Series Works In HP 3000 Networks

The 900 Series has been designed to communicate transparently with other HP 3000s. Consequently, your customers can move a new 900 Series system into existing networks of other HP 3000s with minimal impact on their networks. This is very important since HP will be selling and supporting other HP 3000s well into the 1990's!

Using NS/3000

The 900 Series communicates easily with other HP 3000 systems running Network Services/3000 (NS3000/V) over an IEEE 802.3 Local Area Network (LAN/3000). NS3000/V is the new, improved version of DS/3000. For those customers who have not yet upgraded to NS3000/V, they will need to do so before connecting a 900 Series to another HP 3000 in their network. Since NS3000/V is 100% compatible with DS/3000, the rest of the HP 3000s in a network can remain on DS/3000 if a customer chooses. NS3000/V capabilities will be supported on the first 900 Series systems shipped, with the exceptions of Program to Program Communications, Interprocess Communication, and Remote Process Management (to be provided on a future MPE XL release).

Series II,III,30,33 Communications

Even these discontinued systems will be able to communicate with the 900 Series. They can communicate through any S37/4X/5X/6X/7X system. They will not, however, be supported as direct connections to 900 Series systems because they do not support NS3000/V.

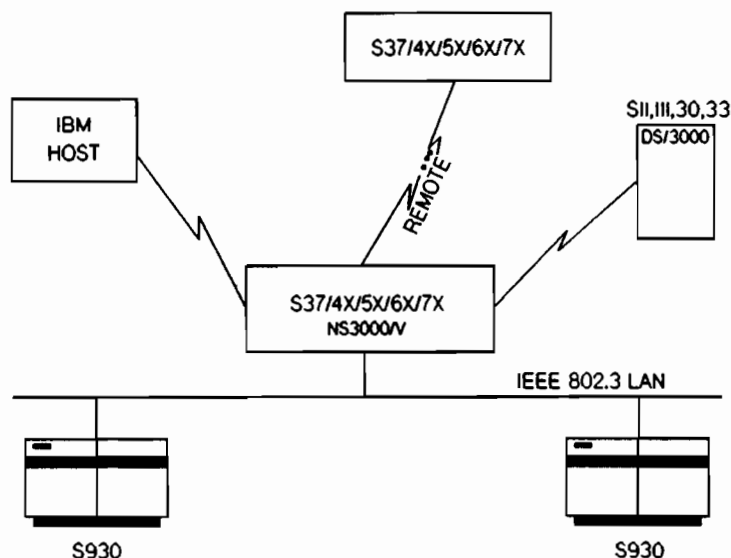
Future Capabilities

Remote Communications. With the first release of the 900 Series, customers requiring their 900 Series system to communicate with remotely located HP 3000s will have to communicate through a local MPE V based HP 3000. A future release of MPE XL will contain support of remote communications on the 900 Series.

IBM Communications. At first release, 900 Series systems can use an intermediate MPE V based HP 3000 to communicate with IBM systems. Later releases will offer direct communication with IBM hosts.

See the Update to the AdvanceNet Product Reference Guide for further details on 900 Series networking.

TRANSPARENT NETWORKING



Cross Development

Applications Developed on the 900 Series Can Run On Other HP 3000 systems

Just as existing HP 3000 applications can be moved to a 900 Series system, customers can develop applications on the 900 Series to run on other HP 3000s. Compatibility Mode and Compatibility Mode compilers allow customers to develop applications for MPE V/E based systems exactly as if they were developing them on these systems today. (The compilers are listed in Appendix A.) Remember that Compatibility Mode is based on MPE V/E table size. Customers should consider this when developing applications for systems which do not have expanded tables. Programmers should also be aware of the object code incompatibilities listed in Appendix C.

Single Version of Source Code

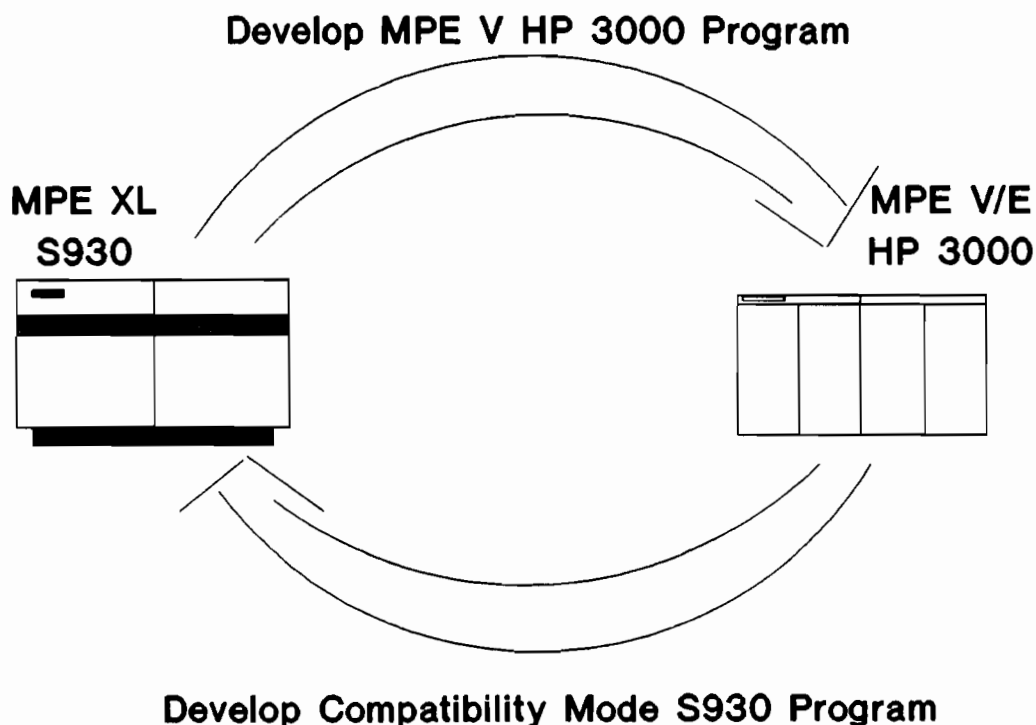
Customers need only one version of source code for applications they develop to run on either a 900 Series system or MPE V based HP 3000 system. Compatibility Mode and Native Mode compilers will work with the same source. This

allows centralized application development where customers can use a Series 930 as a development system of new applications for all their HP 3000s. Application development, compiling and debugging can be done on the 900 Series before moving programs to another HP 3000. For highest confidence, however, we recommend final debugging be done on an MPE V/E based HP 3000.

For development of IMAGE applications intended to run on a 900 Series system in Native Mode, the source code should be developed for TURBOwindow.

Programmers can develop applications on 900 Series systems in any language available on the HP 3000, including FORTRAN/V, BASIC/V, COBOL II, Business BASIC, FORTRAN 77, RPG, Pascal, Transact and SPL. (See Appendix A for compiler offerings.)

CROSS DEVELOPMENT OF PROGRAMS



CHAPTER 3.

PLANNING FOR MIGRATION

**YOU CAN HELP YOUR CUSTOMERS ACT NOW TO
SIMPLIFY MIGRATION LATER**

Planning For Migration

How You Can Ensure A Smooth Migration For Your Customer

What can you do now to help your customers best prepare to upgrade to the 900 Series? Here are some steps for providing your customers with information regarding migration and with guidance which can ease their migration effort.

1. Migration Information.

First, provide your customers with information on migration as it becomes available. The General Information Manual is available now and contains an overview section on migration. Additionally, a data sheet is available now providing an overview of migration. Several months after introduction, "HP 3000 Systems: Migrating to the 900 Series" will be available describing the technical details of migration.

When the Series 930 first ships, a series of customer manuals will be available giving customers detailed descriptions of all system migration issues. For instance, a System Administrator Guide, Programmer Migration Guide, Migrating a Data Center, and TurboIMAGE to HPIMAGE Migration Guide will be available, among others.

2. Program Development Recommendations.

Next, provide your customers with the list of Do's and Don'ts for program development and network planning provided on the next page. These give guidelines on developing or modifying applications so they will be simpler to move to a Series 930 and able to obtain optimum performance.

We have also provided Appendix C, a more detailed list of object code, source code and

database incompatibilities which Software Engineers can use in advising customers developing applications for 900 Series systems. This is provided in detachable format so that it can be updated over time.

3. Estimating Migration Effort.

On a following page you'll find "Evaluating a Customer's Migration Effort" which can help you work with your customer to roughly estimate the effort involved in migrating applications given your customer's particular applications and the desired performance level for them.

4. Migration Tools.

While the level of compatibility between MPE V/E HP 3000s and the 900 Series is very high, we have designed tools to help customers ease their migration even more. These tools are listed in the following pages.

5. Consulting Services.

Consulting services will be available when the Series 930 starts shipping for customers wishing additional migration information and tailored help in guiding their migration effort.

Migration-trained Software Engineers will help customers develop plans to efficiently guide and implement the migration of their applications and data. They will help evaluate resource requirements, qualify applications for migration and establish a schedule for migration activities. Additional HP assistance is also available for customers who want help with the actual migration.

Do's And Don'ts For Customers

Do's

To Move to Compatibility Mode:

1. Move to MPE V/E U-MIT.
2. Identify the few *object code compatibility exceptions* and either program around them, encapsulate them into easy to change locations, or flag their usage for modification when moving to a 900 Series system.
3. Move from IMAGE/3000 (now called IMAGE/V) to *TurboIMAGE/V*.
4. *Networking:*
 - a. Move HP 3000 systems destined to communicate with 900 Series systems from DS/3000 to NS3000/V. Add LAN/3000.
 - b. Identify applications using Program to Program Communications (PTOP), InterProcess Communication (IPC), and Remote Process Management (RPM). Since these services will not be supported at first release, any such applications should plan to remain on their existing HP 3000 system until a later release. Note: The MPE V IPC facility is supported on first release.
 - c. For IBM communications, customers are encouraged to use SNA rather than Bisync. The 900 Series will only support SNA. In future releases, the 900 Series will support bisync RJE (Remote Job Entry) as well as SNA communications (SNA NRJE and SNA IMF). New products developed for HP-IBM communications will be based on SNA.

- d. For customers with MTS, move toward X.25 and HP2334A statistical multiplexers. MTS will not be supported.

To Migrate to Native Mode:

1. Identify the few *source code compatibility exceptions* and either program around them or flag their usage for modification when moving to a Series 930
2. Write applications intended to be modified to high performance Native Mode in *high level languages*: COBOL II, HP FORTRAN 77, HP Business BASIC, HP Pascal, RPG and Transact.
3. Move from FORTRAN/3000 to *HP FORTRAN/77*
4. Move from BASIC/3000 to *HP Business BASIC*
5. Move from SPL to *HP Pascal*; rewrite existing SPL applications in HP Pascal. Isolate SPL usage to procedures.

Don'ts

1. Don't write new applications in *privileged mode*.
2. Don't write new applications in *SPL* if high performance will be required of them, or at least isolate SPL usage to procedures. We plan to have "C" available on a future release.

Evaluating A Customer's Migration Effort

Customer Applications Will Require Varying Degrees Of Migration Effort

Moving To The New 900 Series

Most customers will be able to move their HP 3000 applications to a 900 Series over a weekend and obtain Series 68 level performance (except for those HP applications and peripherals not supported on first release). Except for privileged mode applications, almost all HP 3000 programs will be compatible with the 900 Series.

Moving HP3000 Applications To Top Performance

High-Level Language Applications - Programs written in HP Pascal, COBOL II, RPG, HP FORTRAN 77, HP Business BASIC and Transact can be recompiled to top performance within a matter of minutes. Additional performance may be achieved by moving to HPIMAGE. (See Appendix A for availability of compiler offerings).

Older HP 3000 Language Applications - Programs written in COBOL/V, FORTRAN/V and BASIC/V (previously all "/3000") can move to the 900 Series with the help of conversion aids, and some minor rewriting in order to run at top performance. These aids are currently available on the HP 3000.

SPL-Based Applications - Applications written in SPL can run on the 900 Series but cannot be recompiled to top levels of performance. This is because SPL is an architecturally dependent language based on the existing HP 3000. For these applications, HP provides the Object Code Translator to improve performance up to 15% over that of a restored program. This translator can also be used to improve the performance of non-SPL code. For example, COBOL/V (previously known as COBOL/3000) applications might be object code translated for improved performance while the applications are being converted to COBOL II. In order to achieve top performance with SPL applications, they should be rewritten in Pascal and then recompiled. Customers needing low level system programming capabilities may prefer to use "C", which will be available in Native Mode on a subsequent release.

Privileged Mode Applications - As with HP 3000 upgrades in the past, HP cannot guarantee compatibility of privileged mode applications on the 900 Series. These should be rewritten in non-privileged code to move to the 900 Series.

MIGRATION EFFORT

(Time Per Average Program)
(of 1500-2000 lines of code)

	Performance		
	S68	S68+up to 15%	S68+40-90%
Application Type	Store Restore	Object Code Translator	Recompile
Fortran 77 Business Basic Cobol II Transact II RPG Pascal	10 min	10-20 minutes	10-20 minutes
Cobol/V Basic/V Fortran/V Pascal/V	10 min	10-20 minutes	Not Available
SPL	10 min	10-20 minutes	Not Available
Privileged Mode	Not Assured	Not Assured	Not Assured

Times are estimates. Testing time is not included.

Migration Tools To Assist Customers

HP has created many tools and aids to ease customers' migration to 900 Series systems. These will become available at different points between the period from introduction and first shipment. **Some can be used on existing MPE V/E HP 3000s so customers can use them to start the migration process before receiving a Series 930.** Except where noted, these tools are included with the Series 930 Fundamental Operating System.

1. Early Warning Tools

Tools are under investigation to help your customers detect any MPE V based HP 3000 application code incompatibilities so that they can better plan their migration.

2. System Migration Tools

a. Object Code Translator - Customers can use the Object Code Translator to improve the performance of SPL applications and other MPE V/E HP 3000 programs which remain in Compatibility Mode. It works by reducing the overhead used by Compatibility Mode to convert MPE V/E HP 3000 instructions into 900 Series instructions. Applications can achieve up to 15% greater performance over a restored application. Using the Object Code Translator can increase by several times the amount of disc space occupied by the translated program file.

b. Directory Migration Tool - This is used when upgrading from an MPE V/E U-MIT HP 3000 to a 900 Series system. It will move the accounting structure and limits, preserve UDC structure and files, restore user files, move several key system tables and assist with private volume reconfiguration.

c. TurboWindow - TurboWindow is a software environment which allows TurboIMAGE applications to access HPIMAGE. TurboWindow is included as part of ALLBASE.

d. Switch Assist Tool - This tool is provided to help customers recompile applications into Native Mode while still accessing user supplied SPL procedures in Compatibility Mode.

3. Conversion Tools

a. FORTRAN/3000 to HP FORTRAN 77 Conversion Tool and BASIC/3000 to Business BASIC Conversion Tool

Customers, third parties and migration consultants can use these tools to assist the conversion to the languages which are supported on the 900 Series. At first release, HP FORTRAN 77 will be supported in Native Mode; and HP Business BASIC in Compatibility Mode. Soon after, HP Business BASIC will be supported in Native Mode as well.

b. DBMIGRATE - Customers can employ this easy to use utility to convert TurboIMAGE databases into HPIMAGE format when moving applications to the Native Mode HPIMAGE interface of ALLBASE. DBMIGRATE is included as part of ALLBASE

c. DBSTRAN - Customers can employ this easy to use utility to convert TurboIMAGE schema's into HPIMAGE format when moving databases to the Native Mode HPIMAGE format. DBSTRAN is included as part of ALLBASE.

d. Floating Point Conversion Intrinsic - The optional floating point Coprocessor on the Series 930 for Native Mode floating point operations is based on the IEEE floating point standard. MPE V HP 3000 floating point data will be handled by software on the Series 930. An intrinsic is provided to help the customer convert from MPE V HP 3000 format to the IEEE format if it is desired.

Questions & Answers

1. WHAT ARE THE EXCEPTIONS TO COMPATIBILITY?

Appendix C is provided as a guide to incompatibilities. Software Engineers can use it in advising customers who want to start programming for the Series 930. Following are several of the more important incompatibilities.

There are a few exceptions to *object code compatibility*:

- * Applications which use undocumented intrinsics, execute in privileged mode, call routines that require privileged mode, or use privileged machine instructions may need to be modified when moved to an 900 Series system.
- * At first release only compiled BASIC/3000 programs will run on 900 Series systems; interpreted BASIC/3000 programs must be compiled before being moved to a 900 Series system.
- * For other incompatibilities please see Appendix C.

There are a few exceptions to *source code compatibility*:

- * All exceptions to object code compatibility apply to applications to be recompiled into Native Mode.
- * Source code compatibility applies only to applications written in
COBOL II FORTRAN 77 RPG Transact Pascal Business BASIC
- * For several other incompatibilities please see Appendix C.

2. ARE THERE ANY ROADBLOCKS TO EASY MIGRATION AND HIGH PERFORMANCE?

If applications are written in older languages or SPL, they will have to be converted or rewritten before they can be recompiled to top performance. This is true for applications written in SPL, COBOL/V, FORTRAN/V, and BASIC/V. HP provides conversion aides for FORTRAN/V, BASIC/V, and COBOL/V.

3. CAN YOU UPDATE TO THE HPIMAGE INTERFACE OF ALLBASE FROM IMAGE/3000 WITHOUT GOING THROUGH TURBOIMAGE?

No. Databases will have to exist in TurboIMAGE format in order to move them to the HPIMAGE interface of ALLBASE. The move to TurboIMAGE requires no source code changes, and an HP supplied utility converts the database quickly and easily.

4. HOW WILL MY Series II/III/30/33 UPDATE TO A Series 900?

Migration assistance will be provided for Series II/III/30/33 to upgrade to 900 Series systems. This will help customers in moving applications and data on these systems to the MPE V/E U-MIT operating system and then to MPE XL.

Questions & Answers

5. WILL MIGRATING TO A 900 SERIES SYSTEM REQUIRE AN SE?

The migration paths have been designed so that they are simple enough for customers to pursue themselves. However, customers may want to take advantage of the Migration Consulting Services available to ensure they follow a plan to achieve the best performance.

6 .CAN A 900 SERIES COMMUNICATE WITH IBM?

Yes. MPE V/E SNA Server/Access provides transparent access to HP-IBM SNA network services for all HP 3000 processors connected to a Local Area Network. MPE V based HP 3000 provides limited bisync HP-IBM communications for 900 Series systems.

Appendix A

HP 3000 Compiler Introductions

Your customer's HP 3000 MPE V/E based applications are forward compatible with the compilers on the 900 Series of HP 3000 systems.

Native Mode compilers for COBOL II, HP FORTRAN 77 and HP Pascal will be available at first release, while those for HP Business BASIC, RPG, Transact and "C" will be available with a future release.

Compatibility Mode compilers will be available for those wishing to develop applications on a 900 Series system which are intended to run on MPE

V/E HP 3000 systems. Using these compilers in Compatibility Mode will prevent the development of applications which would exceed any limitations of MPE V/E systems.

Run-time support is provided for all HP 3000 languages allowing customers to restore their applications onto a 900 Series system without the need for any changes or recompilation.

Below is a table listing the phasing of compiler introductions.

PHASED COMPILER INTRODUCTIONS

LANGUAGE COMPILERS	NATIVE MODE		COMPATIBILITY MODE			
			COMPILERS		RUN TIME	
	1	F	1	F	1	F
COBOL II	X			X	X	
COBOL					X	
HP PASCAL	X			X	X	
PASCAL				X	X	
HP FORTRAN/77	X			X	X	
FORTTRAN/66				X	X	
HP BUSINESS BASIC		X	X		X	
BASIC				X	X	
RPG		X	X		X	
C		X				X
SPL			X		X	
TRANSACTION		X	X*		X	

1 = 1st release of HP3000/S930 architecture

F = Planned for future release

*=Transact runs interpretively, as on current HP 3000s

NATIVE MODE = HP3000 SERIES 900 COMPILER

COMPATIBILITY MODE = COMPILERS PRODUCE HP3000 MPE-V/E BASED SYSTEMS
OBJECT CODE

RUN-TIME SUPPORT = NO COMPILER - RUN TIME SUPPORT VIA LIBRARIES ONLY

Appendix B

Additional Sources of Information on Migration			
DOCUMENT	AUDIENCE	NATURE	AVAILABILITY
General Information Manual	Customers (MIS Mgrs.)	Brief Overview of Migration benefits	Introduction
HP 3000 Systems: Migrating to the 900 Series	Customers (Technical Experts)	Technical details of Migration	Several Months after Intro
Migration Overview Manual	Customers (MIS Mgrs.)	Post Sales Overview of Migration and process of upgrading	Summer 1986
Migration Manual Series	Customers	Post Sales manuals, detailed description of all migration issues	First Shipment
Migration Consulting Services	Customers	Software Engineer assistance to plan and implement migration to a 900 Series system	First Shipment
S930 Update to HP 3000 System Configuration Guide	Customers	For information on Peripheral Support	Introduction

Migration Sales Guide

Appendix C

Appendix C

Incompatibilities

See your HP Sales Representative or HP SE to discuss exceptions to object code compatibility that may apply to your software development.

C

C

C

