Information Management Series

HP ALLBASE/4GL
Developer Administration Manual

For MPE/iX Systems

HP Part No. 30601-64201
Printed in U.S.A.

E0592

FINAL TRIM SIZE : 7.0 in x 8.5 in

NOTICE

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD PROVIDES THIS MATERIAL "AS IS" AND MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. HEWLETT-PACKARD SHALL NOT BE LIABLE FOR ERRORS CONTAINED HEREIN OR FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING, PERFORMANCE OR USE OF THIS MATERIAL WHETHER BASED ON WARRANTY, CONTRACT, OR OTHER LEGAL THEORY.

Hewlett-Packard assumes no responsibility for the use or reliability of its software on equipment that is not furnished by Hewlett-Packard.

SWT/SOFTWARE TECHNOLOGY CENTER
8000 FOOTHILLS BOULEVARD
ROSEVILLE, CA 95678, U.S.A.

FINAL TRIM SIZE : 7.0 in x 8.5 in

Printing History

New editions of this manual incorporate all material updated since the previous edition. Publication dates for each edition of the manual are listed below.

First Edition	September 1988
Second Edition	September 1989
Third Edition	February 1990
Fourth Edition	May 1992

Preface

MPE/iX

MPE/iX, Multiprogramming Executive with Integrated POSIX, is the latest in a series of forward-compatible operating systems for the HP 3000 line of computers.

In HP documentation and in talking with other HP 3000 users you will encounter references to MPE XL. All programs written for MPE XL will run without change under MPE/iX. You can continue to use MPE XL system documentation, although it may not refer to features added to the operating system to support POSIX (for example, hierarchical directories).

Finally, you may encounter references to MPE V, which is the operating system for the HP 3000s not based on the PA-RISC (precision architecture-reduced instruction set computing) architecture. MPE V software can be run on the PA-RISC (Series 900) HP 3000s in what is known as compatibility mode.

About This Manual

This manual contains information needed by HP ALLBASE/4GL system administrators. It describes the features and the use of the HP ALLBASE/4GL *administ* application.

This manual contains seven chapters, five appendixes, a glossary and an index.

Chapter 1 provides an overview of the structure of HP ALLBASE/4GL and the responsibilities of the HP ALLBASE/4GL system administrator.

Chapters 2 to 6 introduce the facilities available in the HP ALLBASE/4GL administrator application, and outline some aspects you need to consider in setting up HP ALLBASE/4GL to meet the requirements of your site. These chapters also describe the procedures for some of the administration tasks.

Chapter 7 is a reference chapter describing the screens and screen fields in the administrator application.

The first three appendixes contain a list of HP ALLBASE/4GL logic command names, a list of HP ALLBASE/4GL communication area names, and a description of the MPE/iX environment for HP ALLBASE/GL. The final two appendixes have an outline description of the requirements for HP ALLBASE/SQL database environments and HP TurboIMAGE/iX databases for use with HP ALLBASE/4GL applications. The glossary defines the meaning of some HP ALLBASE/4GL terms.

Related Publications

In addition to this manual, the following manuals are part of the HP ALLBASE/4GL documentation set:

- The *HP ALLBASE/4GL Developer Self-Paced Training Guide*
- The *HP ALLBASE/4GL Developer Reference Manual (Volumes 1 and 2)*
- The *HP ALLBASE/4GL Developer Quick Reference Guide*
- The *HP ALLBASE/4GL Software Update Notice*

Conventions

The syntax conventions used in this manual are summarized below.

Notation	Description
underlining	When necessary for clarity, underlining indicates user input. For example: `MPE/iX: hello name.account`
`shading`	Shaded text represents inverse video text on the terminal screen.
⎕	The symbol ⎕ indicates a key on the terminal keyboard. For example, Return indicates the carriage return key.

FINAL TRIM SIZE : 7.0 in x 8.5 in

Contents

Tables

FINAL TRIM SIZE : 7.0 in x 8.5 in

1

Overview

Introduction

HP ALLBASE/4GL is an advanced fourth generation language that enables developers to design and implement application software by defining the required results, rather than the procedures necessary to achieve those results.

HP ALLBASE/4GL provides facilities for the following tasks:

- Centralized system administration.
- Developing new applications.
- Modifying existing applications.
- Producing multiple versions of applications for different users.
- Automatic documentation of application details.

This manual is written for HP ALLBASE/4GL system administrators. It describes the centralized administration facilities.

HP ALLBASE/4GL System Architecture

HP ALLBASE/4GL consists of the following major functional components:

- Administrator application.
- Developer application.
- End user applications.
- Operating system interface.
- Data manager.

The Administrator Application

The HP ALLBASE/4GL administrator is, in fact, an HP ALLBASE/4GL application. As system administrator, you will use the administrator application to control the overall operation of the HP ALLBASE/4GL system. The administrator application allows you to control system security and set various system-wide defaults. The administrator application also has facilities for loading and unloading applications. The name of the administrator application is *administ*.

The Developer Application

The HP ALLBASE/4GL developer is also an HP ALLBASE/4GL application. This is the application that developers use to create end user applications. Its name is *developr*.

The developer provides application development facilities that can be grouped under the following headings:

- Dictionary.
- User interface screens.
- Logic.
- Application reports.

The developer application includes a number of utilities for copying or deleting application components, for printing documentation, and for testing developed applications. The developer also contains a module builder, which creates file maintenance logic and screens automatically.

The *HP ALLBASE/4GL Developer Reference Manual* describes the developer application in detail.

End User Applications

HP ALLBASE/4GL supports two types of end user applications: base applications and versions.

A base application is an application that is complete in itself and contains all the necessary logic. A version is an application that has been modified for a

particular end user or a group of end users. A version cannot exist unless its base application exists on the same HP ALLBASE/4GL system.

The Operating System Interface

HP ALLBASE/4GL operates on Hewlett-Packard HP 3000 Series 900 computers under the MPE/iX operating system.

The MPE/iX operating system interface handles all communication between HP ALLBASE/4GL and the host operating system. For the most part, you won't need to use MPE/iX commands while you're working with the HP ALLBASE/4GL administrator. However, some aspects of managing the HP ALLBASE/4GL system will be a good deal easier to understand if you are familiar with at least the rudiments of the MPE/iX operating system.

Data Manager

The data manager handles all access to the application databases. HP ALLBASE/4GL gives you flexibility in choosing a data manager suitable for your needs.

Applications can use HP ALLBASE/SQL and HP TurboIMAGE/XL databases, and can also use KSAM data files and serial data files.

System Administration Responsibilities

The system administrator's responsibilities come under the following headings:

- System specifications.
- System security.

This manual doesn't describe the precise procedures for carrying out your tasks as system administrator. Since the requirements of different sites vary widely, this manual describes the facilities available in HP ALLBASE/4GL. You can assess the particular needs of your site, and use the facilities you need.

System Specifications

HP ALLBASE/4GL allows centralized definition of a number of system-wide items. Centralizing these definitions ensures consistency across all applications on the system. It also relieves application developers of the need for creating suitable local definitions.

HP ALLBASE/4GL gives you facilities to define system-wide formats for dates and decimal numbers, the currency symbol, screen display enhancements, and some aspects of the MPE/iX operating environment.

For most installations, establishing the system-wide definitions is the last part of the HP ALLBASE/4GL installation process. You will probably only need to set most of the system-wide parameters once.

System Security

The HP ALLBASE/4GL system administrator controls all aspects of system security. This includes:

- Assigning names to developer users and end users.
- Assigning user passwords.
- Defining application and version names and passwords.
- Defining development security codes.
- Securing (limiting access to) items within application menus.
- Assigning database access parameters.

The HP ALLBASE/4GL system security facilities are additional to the security facilities that MPE/iX provides.

How This Manual Works

In addition to this overview, this manual contains five chapters describing the use of the administrator application and a comprehensive reference chapter.

The chapters are:

- **Chapter 2—Getting Started**

  This chapter tells you how to sign on to the system as system administrator, how to select and execute menu items, and how to enter and edit data on the administrator screens.

- **Chapter 3—System-Wide Specifications**

  This chapter describes the procedure for setting some of the system-wide parameters for HP ALLBASE/4GL. Most of the tasks described in this chapter are jobs you only need to do once. They're really the last part of installing the system.

- **Chapter 4—System Security**

  This chapter discusses the procedures for assigning user names and user passwords for developer users and end users; defining applications, application passwords and development security codes; implementing menu item security; and defining databases and database access parameters.

- **Chapter 5—System Files**

  This chapter introduces the various types of system files used by the HP ALLBASE/4GL system.

- **Chapter 6—Administrator Utilities**

  This chapter describes the administrator utilities for printing documentation, deleting items, and loading or unloading applications.

- **Chapter 7—Reference Chapter**

  This chapter contains a description of all screens in the administrator application.

None of these chapters contain comprehensive "how-to-do-it" instructions. Instead, they describe the various HP ALLBASE/4GL facilities. You should assess the requirements of your site and use the HP ALLBASE/4GL facilities

that are appropriate for your site's needs. For the most part, the administrator application screens are self explanatory. Chapters 2 through 6 of the manual include some screen images and step by step descriptions where needed. However, in most circumstances, they do not include detailed step by step instructions. Refer to the reference chapter (chapter 7) if you need more detailed information about the various screen fields.

This manual refers to the HP ALLBASE/SQL (Hewlett-Packard Structured Query Language) database management system and the HP TurboIMAGE/XL database management system. HP ALLBASE/4GL provides an interface to allow developers to design applications that access either or both of these database management systems. For information about the systems, refer to the following manuals:

- *HP ALLBASE/SQL Database Administration Guide.*
- *HP ALLBASE/SQL Reference Manual.*
- *HP TurboIMAGE/XL Database Management System Reference Manual.*

2

Getting Started

This chapter describes the following operations with HP ALLBASE/4GL:

- Completing the HP ALLBASE/4GL installation process.
- Starting HP ALLBASE/4GL.
- Signing on to HP ALLBASE/4GL as the system administrator.
- Selecting administration facilities from the HP ALLBASE/4GL menus to define system parameters, perform routine system tasks, or define the names of developers, applications, versions, end users, or databases.
- Signing off the system.

Installing HP ALLBASE/4GL

HP ALLBASE/4GL is supplied on an MPE/iX subsystem tape. The MPE/iX AUTOINST process creates a number of groups in the SYS account, and installs HP ALLBASE/4GL in these groups.

Installing New HP ALLBASE/4GL Systems

To complete the HP ALLBASE/4GL installation, you must create a new MPE/iX account. You can select any name for the account, but we suggest that you use the name HP4GL for the HP ALLBASE/4GL developer package. (The suggested account name for the HP ALLBASE/4GL run-time environment is HP4GLR.)

When you have created the account, you must log on to the account as account manager and execute a command file. This command file creates a number of

groups in the new account, and then copies the HP ALLBASE/4GL files into the appropriate groups.

To complete the HP ALLBASE/4GL developer package installation, perform the following steps:

1. Create the account as follows:

```
:HELLO MANAGER.SYS
:NEWACCT HP4GL,MGR;PASS=password;CAP=AM,AL,GL,ND,SF,BA,IA,PH
```

2. Execute the following commands:

```
:HELLO MGR.HP4GL
:HP4BLD.HP4GL.SYS
```

This executes the command file HP4BLD.HP4GL.SYS. This file copies a number of files from the HP4GL.SYS group to the new group.

Upgrading Existing HP ALLBASE/4GL Systems

To complete the installation, you must log on to your HP ALLBASE/4GL account as account manager and execute a command file. This command file creates a number of groups in the new account and copies the HP ALLBASE/4GL files into the appropriate groups.

The following instructions assume that you have used the suggested name HP4GL as the HP ALLBASE/4GL account name. If you have used a different name, substitute it for all occurrences of the HP4GL name.

To complete the installation, perform the following steps:

1. If you have already unloaded your HP ALLBASE/4GL applications, skip to the next step. Only complete this step if you did not unload your existing HP ALLBASE/4GL applications before completing the AUTOINST process.

   Execute the following commands:

   ```
   :SETVAR HP4SPATH "HP4S.HP4GL"
   :SETVAR HP4APPNPATH "HP4APPN.HP4GL"
   :HP4ULD.PUB.SYS
   ```

   The first two commands set several system variables. The third command initiates HP ALLBASE/4GL unloading procedures, and the administrator

application unloading screen is displayed. Complete the unload procedure for each of your existing applications. For detailed instructions about unloading applications, refer to Chapter 6, Administrator Utilities.

2. Log on to the HP4GL account and execute the following commands:

```
:NEWGROUP HP4OLDS
:HP4SCOPY.HP4GL.SYS HP4S HP4OLDS
:PURGEGROUP HP4S
```

   These commands create a new group and copy any existing HP ALLBASE/4GL system files to this new group from the current S-file group. The S-file group is then purged so that updated S-files may be copied into the HP4S group.

3. Execute the following command file from the HP4GL account:

```
:HP4BLD.HP4GL.SYS
```

   This executes the command file HP4BLD.HP4GL.SYS. This file copies a number of files from the HP4GL.SYS group to the HP4GL group.

4. Use the HP ALLBASE/4GL administrator system to reload your existing applications. For full instructions, refer to Chapter 6.

Running HP ALLBASE/4GL without HP ALLBASE/SQL

The HP ALLBASE/4GL installation procedure assumes that HP ALLBASE/SQL is available on the MPE/iX system. If HP ALLBASE/SQL is not available, the installation command file displays an error message. Under these conditions, you must complete the installation procedure manually by executing the following commands:

```
:HELLO MANAGER.SYS
:FCOPY FROM=HP4XLNS.HP4GL.SYS;TO=HP4XL.PUB.SYS
```

This copies an executable library (NMXL) file to the PUB.SYS group. This file allows HP ALLBASE/4GL to operate without HP ALLBASE/SQL.

Note

Application developers should not attempt to define or generate SQL logic blocks in applications if HP ALLBASE/SQL is not available on the MPE/iX system. HP ALLBASE/4GL will abort if a user attempts to generate an SQL logic block when HP ALLBASE/SQL is not available.

Starting ALLBASE/4GL

Before you can sign on to HP ALLBASE/4GL, you must log on to the host MPE/iX computer system. The details of this procedure may vary from site to site.

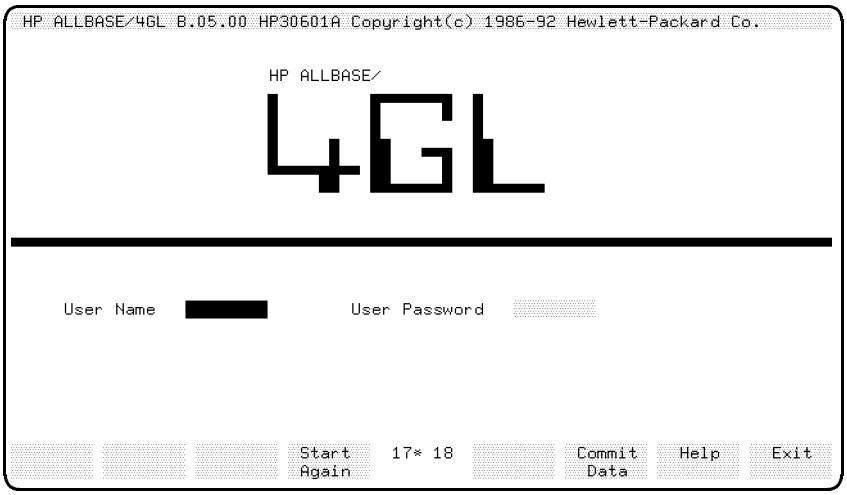
When you have logged on to MPE/iX, you can start HP ALLBASE/4GL. The standard installation uses an MPE/iX command file called *HP4GL* to start HP ALLBASE/4GL. You run HP ALLBASE/4GL using this command file by typing `HP4GL` at the MPE/iX prompt. When MPE/iX executes this command file, it automatically presents the HP ALLBASE/4GL sign-on screen.

Note

You cannot run HP ALLBASE/4GL on the MPE/iX system console.

Signing On to HP ALLBASE/4GL

To sign on to HP ALLBASE/4GL as the system administrator you must complete the HP ALLBASE/4GL sign-on screen.



If you have no password: To sign on to HP ALLBASE/4GL as system administrator when you have not yet defined a system administrator password, complete the sign-on screen as follows:

Enter the user name `administ` (notice that *administ* has a lowercase *a*), and press the `Commit Data` function key. HP ALLBASE/4GL then displays the administrator main menu.

Note

To ensure that the HP ALLBASE/4GL system remains secure, you should define a system administrator password. The procedure to define the system administrator password is described in Chapter 4.

If you have a password: After you have defined a system administrator password, use the following procedure to sign on as system administrator:

Enter the user name `administ` and press Return. Then enter the system administrator password and press the `Commit Data` function key. HP ALLBASE/4GL then displays the administrator main menu. Note that the password is not displayed on the screen as you type it in. You must enter

the password correctly within three attempts, otherwise HP ALLBASE/4GL returns the cursor to the *User Name* field.

Sign-on Screen Function Keys

The sign-on screen uses a number of function keys. The labels at the bottom of the screen show the functions performed by these keys.

The set of function keys associated with the sign-on screen are:

f4 `Start Again` Cancels the current sign-on screen together with any entries you have made and displays a new sign-on screen.

f6 `Commit Data` Confirms your data entry and terminates the current screen.

f7 `Help` Displays the help screen associated with the current field or screen.

f8 `Exit` Terminates the current HP ALLBASE/4GL session and returns you to the MPE/iX operating system.

HP ALLBASE/4GL Terminals

HP ALLBASE/4GL runs on most HP TERM0 terminals supported under the MPE/iX operating system. It supports all the standard features of these terminals such as function keys and special editing keys. Depending on your terminal type, HP ALLBASE/4GL can also use the terminal's line drawing, color, and touchscreen capabilities.

HP ALLBASE/4GL Terminal Initialization

At the start of a session, HP ALLBASE/4GL uses the system variable HP4TERM to establish the terminal type and capabilities. HP ALLBASE/4GL uses a support file for your terminal to determine how to drive it. If HP ALLBASE/4GL cannot find the terminal support file, or the HP4TERM variable is undefined or invalid, an error message is displayed and HP ALLBASE/4GL terminates.

In general, the value of the HP4TERM variable should be the name of your terminal type. For example, if you are using an HP 2392A terminal you should set the HP4TERM variable with the following command:

```
SETVAR HP4TERM "HP2392A"
```

If required, you can use a logon UDC (user defined command) to set the HP4TERM variable.

Refer to Appendix C for details of the acceptable values for the HP4TERM variable.

If the HP4TERM variable is not set, the HP ALLBASE/4GL start-up command file assumes a default value of "HP".

System Character Sets

HP ALLBASE/4GL supports the full HP roman8 extended character set. To use eight-bit characters, your terminal must support the HP roman8 character set and must be in eight-bit mode.

If your terminal doesn't have line drawing capabilities, HP ALLBASE/4GL replaces any line drawing characters with equivalent ASCII characters.

Using a Touchscreen Terminal

If you want to use touchscreen operation, make sure that the terminal is in touch mode before you start HP ALLBASE/4GL. You can turn touch *off* at any time while HP ALLBASE/4GL is running, but you cannot turn touch *on* again. If you do, touch operation may not work reliably.

Accessing HP ALLBASE/QUERY

If you have HP ALLBASE/QUERY installed on your system, you can access it directly from the HP ALLBASE/4GL sign-on screen. You may then make ad hoc queries or browse an HP ALLBASE/SQL database. To do this, enter the user name `hpqm` in the *User Name* field, and accept the default application name of **hpqm**. Press the `Commit Data` function key to start HP ALLBASE/QUERY.

When you exit from HP ALLBASE/QUERY, you are returned to the MPE/iX prompt.

Command Line Options

HP ALLBASE/4GL lets you use command line options to run the program in a number of different ways. These options are available to developer users and end users. When used with options, the command line becomes:

```
:HP4GL ["options"] [variable-value] ...
```

In this command, *options* can be any of the options shown in the following table. Separate options on the command line with spaces.

Option	Description
-a [*application_name*] [:*application_passwd*]	This is the form of the **-a** option used by an end user. It invokes HP ALLBASE/4GL and passes control directly to the initial action defined for *application_name*. If *application_name* is not specified, the application defaults to that specified for the end user in the *administ* end user validation screen. If the end user has no default application, HP ALLBASE/4GL exits with an error message. The **-u** option must be specified with this option.
-a *application_name* [:*security_code*]	This is the form of the **-a** option used by a developer. It invokes HP ALLBASE/4GL and passes control directly to the *developr* main

menu (developing the application specified by *application_name*). The *security_code* field is the development security code for the application. The **-u** option must be specified with this option.

-i [*delay*]

Turns on logic tracing with a pause on trace messages of *delay* seconds. The *delay* value can be any value from 0 through 9. If *delay* is not specified, the pause defaults to 3 seconds. All messages are logged into a temporary file named *HP4TRACE* in the user's current group.

-l [*logo_screen*] [:*logo_application*]

This option allows you to display a customized window (*logo_screen*) on the sign-on screen. If *logo_screen* is not specified or cannot be found, HP ALLBASE/4GL attempts to display the default window, *logo*. If this window cannot be found, HP ALLBASE/4GL displays the standard HP ALLBASE/4GL logo window. HP ALLBASE/4GL searches through the application specified by *logo_application* for the window *logo_screen*. If *logo_application* is not specified, HP ALLBASE/4GL searches the default application, *HPlogo*. If the application *HPlogo* is not defined, HP ALLBASE/4GL displays the standard HP ALLBASE/4GL logo window. Refer to "Customized Sign-on", for further information.

-m [*delay*]

Sets the pause on each HP ALLBASE/4GL message to *delay* seconds. *Delay* can be any value from 0 through 9. If *delay* is not specified, the pause defaults to 3 seconds.

-n

Activates the Tab key for use with Name Recall function. This function allows developers to use the Tab key to scroll through item names previously defined for an active field on an ALLBASE/4GL screen.

-s	Turns on logging of HP ALLBASE/4GL messages. When logging is turned on, all messages are logged into a temporary file named *HP4TRACE* in the user's current group.
-u *user_name* [:*user_passwd*]	Bypasses the standard sign-on screen and logs the user specified by *user_name* into the HP ALLBASE/4GL application specified by the **-a** option. If *user_name* is a developer, HP ALLBASE/4GL runs the developer application. The **-a** option must be specified with this option.

The *variable* option on this command line allows you to set values for the MPE/iX variables or job control words used by HP ALLBASE/4GL.

You can set values for the following variables and job control words:

- HP4APPNPATH
- HP4DATAPATH
- HP4DBMPATH
- HP4FSPATH
- HP4SPATH
- HP4SQLPATH
- HP4TERM
- HP4TIPATH
- NLUSERLANG (job control word)
- NLDATALANG (job control word)

The values specified on the command line only apply for the current session of HP ALLBASE/4GL. The existing values (if any) for these variables and job control words are restored when you exit from HP ALLBASE/4GL.

Refer to Appendix C for more information about these variables and job control words.

Sign-On Screen Bypass

Sign-on screen bypass is not available for the administrator application.

End users and developer users can bypass the HP ALLBASE/4GL sign-on screen and go directly to the initial action of the application if HP ALLBASE/4GL is invoked with the **-a** and **-u** command line options. You must use the **-a** and **-u** options together.

For an end user, the **-a** option takes two arguments: *application_name* and *application_passwd*. *Application_name* is the name of the application that you want the user to run. *Application_passwd* is the password (if any) defined for the application. *Application_passwd* must be preceded by a colon (:). If you have specified a default application for an end user on the end user validation screen, you can leave *application_name* blank. If you leave *application_name* blank and the end user does not have a default application, HP ALLBASE/4GL exits with an error message.

For a developer user the **-a** option also uses two arguments: *application_name* and *security_code*. *Application_name* is the name of the application to be developed, and *security_code* is the development security code (if any) for the application. *Security_code* must be preceded by a colon (:). A developer can still access an application without specifying the security code for the application, but cannot modify any secured components in the application unless the correct security code is used.

Note

You cannot bypass the HP ALLBASE/4GL sign-on screen and access the *administ* application. HP ALLBASE/4GL exits with an error message if you specify a *user_name* of *administ*.

Customized Sign-on

You can display a customized logo window when an HP ALLBASE/4GL application is run with the **-l** command line option. You can include the **-l** option on the command line when you run HP ALLBASE/4GL, or edit the *hp4gl* script to include the **-l** option.

The **-l** option takes two arguments: *logo_screen* and *logo_application*. *Logo_screen* is the name of the window screen that you want to display on the sign-on screen. *Logo_application* is the name of the application in which *logo_screen* is defined. *Logo_application* must be preceded by a colon (:). The **-l** option and its arguments are ignored if the **-a** and **-u** options are used on the same command line.

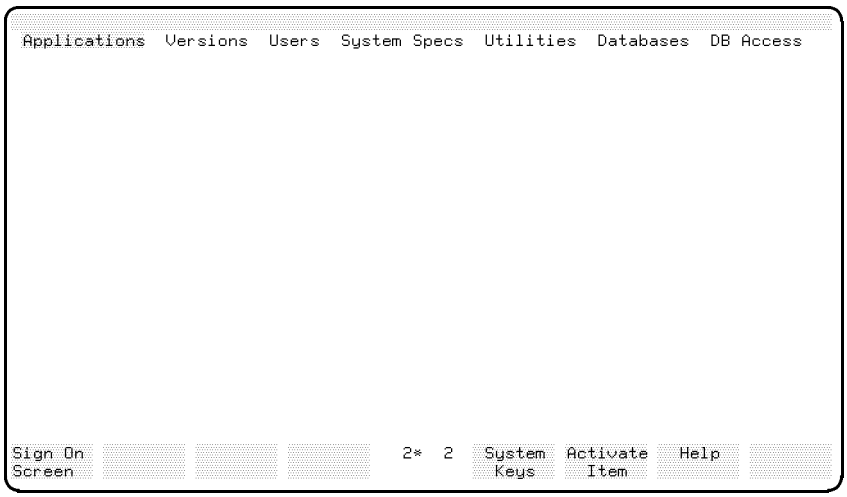
The screen *logo_screen* **must** be a window. If it is a menu or a data screen, HP ALLBASE/4GL ignores it and displays the standard HP ALLBASE/4GL logo screen. Use the HP ALLBASE/4GL screen painter to create the window. The screen cannot contain any data input or display fields, and the only valid system items for this window are the *DATE and *TIME communication area fields. Only lines 1 to 21 are displayed on the screen. The top line of the window is displayed as the second line of the sign-on screen (the Hewlett-Packard copyright notice and product part number occupy the top line). If the custom window extends beyond line 13, HP ALLBASE/4GL may overwrite parts of the window when it displays the user name/password and application name/password fields.

HP ALLBASE/4GL searches for *logo_screen* in the application *logo_application*. If *logo_screen* does not exist in *logo_application*, HP ALLBASE/4GL searches in the application *HPlogo* for *logo_screen*.

If *logo_screen* is not found in either of these applications, HP ALLBASE/4GL searches for a window named *logo* in *logo_application*, and then in the application *HPlogo*.

If you omit *logo_screen* from the command line, HP ALLBASE/4GL searches for a window named *logo*. If you omit *application_name* from the command line, HP ALLBASE/4GL only searches in the *HPlogo* application. If you use the **-l** option with no arguments, HP ALLBASE/4GL searches for a window named *logo* in the *HPlogo* application. If you do not specify the **-l** option at all, HP ALLBASE/4GL uses the standard sign-on window.

The Administrator Main Menu



HP ALLBASE/4GL always displays this menu when you sign on as system administrator.

Menu Selections

Applications. This option displays the application definition screen, allowing you define an application name, the users and user groups for the application, and the security for the application.

Versions. This option displays the version definition screen, allowing you to define a version of an existing application.

Users. This option displays the user validation menu. Selections on this menu allow you to define developers and end users for applications. A selection on this menu also allows you to set the security attributes for items on application menus.

System Specs. This option displays the system-wide specifications menu. Selections on this menu allow you to define various system-wide defaults,

terminal display attributes, master titles, and synonyms for command names and communication area names.

Utilities. This option displays the administrator utilities menu. Selections on this menu allow you to print administrator documentation, load or unload applications, and delete developer names, user names, or whole applications.

Databases. This option displays the database definition screen. This screen allows you to define HP TurboIMAGE/XL databases.

DB Access. This option displays the parameters for database access screen. On this screen you may specify the HP TurboIMAGE/XL databases that may be accessed by an application, and the database access parameter required for the application to access a database.

Selecting Menu Items

HP ALLBASE/4GL accepts input from the terminal using the MPE/iX format mode. This means that HP ALLBASE/4GL does not process any of your input until it receives a carriage return or tab character. Keep this general rule in mind as you use HP ALLBASE/4GL menus and data screens.

When HP ALLBASE/4GL initially displays a menu, the first item is highlighted. To activate the highlighted item, press Return or press the `Activate Item` function key. HP ALLBASE/4GL then executes the selected item.

You may use any of the following methods to select another item:

- Use the Tab key to select the item you want:

  - The Tab key selects the next item in the tabbing sequence, which is from left to right, top to bottom, with screen wrap-around from bottom right to top left.

  - Pressing Shift and Tab together followed by Return selects the next item in the reverse tabbing sequence. Reverse tabbing sequence is from right to left, bottom to top, with screen wrap-around from top left to bottom right.

- Use any combination of the cursor control keys cursor left, cursor right, cursor up, and cursor down followed by the Return key, to select the item you want. As

you press the cursor keys, the cursor moves about the screen. When you press the Return key, HP ALLBASE/4GL selects the menu item closest to the new cursor position.

- The cursor home key, followed by the Return key, selects the top left item on the screen.

- Pressing Shift and cursor home together, followed by the Return key, selects the bottom right item on the screen.

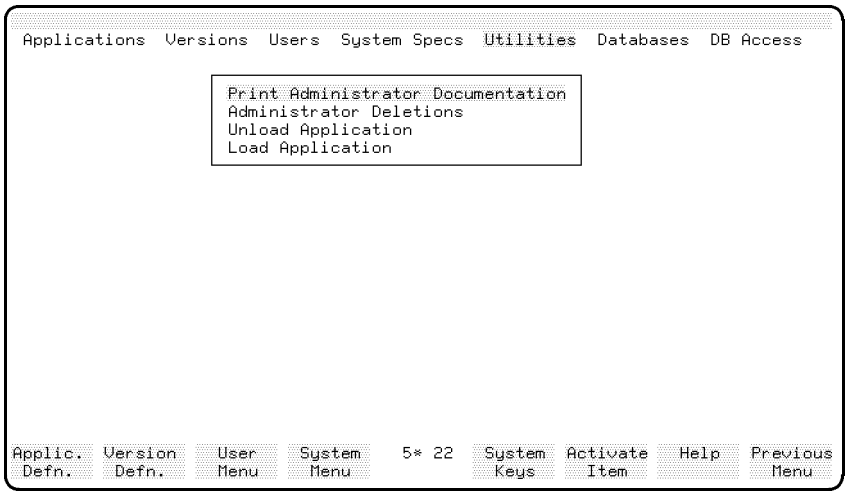
- HP touchscreens:

  - Touch the item you want. HP ALLBASE/4GL responds to this request immediately and highlights the item.

- Type a selection abbreviation:

  - To select a menu item by abbreviation, enter the first letter of the menu item title. A single character display field at the bottom left corner of the screen echoes the character you type. When you press the Return key HP ALLBASE/4GL highlights the item corresponding to the abbreviation. If there is more than one item with the same abbreviation, enter the same letter again and press the Return key. HP ALLBASE/4GL highlights the next item corresponding to the abbreviation.

The following example demonstrates how to select menu items for a particular menu. In this example the menu is the *Utilities* menu.



Utilities Menu

When HP ALLBASE/4GL first displays this menu, the first line of the menu, *Print Administrator Documentation*, is highlighted.

You can select the other items on this menu by entering the following abbreviations:

- Type `A` (Return) to select *Administrator Deletions*.
- Type `U` (Return) to select *Unload Application*.
- Type `L` (Return) to select *Load Application*.

You cannot select any items in the main menu. You may only select items in the active menu.

Executing Menu Items

You can only execute the currently highlighted menu item. To execute the highlighted menu item, press the (Return) key, or the `Activate Item` function key.

Menu Bypass

HP ALLBASE/4GL has a menu bypass facility that allows you to display menus directly without going through the main menu or other menus.

To display a specific menu or screen, type / and press the Return key at any menu. The system responds by displaying a message prompting you to enter the name of the menu you want to display. (Each HP ALLBASE/4GL menu displays its name at the right hand side of the banner line at the top of the menu.) Enter the name of the menu that you want to display, and press the Return key. HP ALLBASE/4GL displays the screen as though you had selected it from a menu.

Function Keys

In addition to the selections displayed on menus, HP ALLBASE/4GL displays application and system selections on eight function key labels located along the bottom of the screen.

Each function key label indicates the function available to you if you press the associated function key.

With HP touchscreens you can select the function key facility directly by touching the function key label on the screen.

Standard Function Keys

The HP ALLBASE/4GL administrator application has four standard function keys associated with every screen except the sign-on screen. They are f5 to f8. The actions of these keys are standard throughout HP ALLBASE/4GL and are not described elsewhere in this manual unless they are significantly different from those described below.

f5 `System Keys` Loads the standard function key set that enables you to access a number of system and terminal utilities. Refer to System Keys Function Key Set below.

f6 `Activate Item` (menus) Confirms your menu selection and executes the selected item.

or

f6 `Commit Data` (data screens) Confirms your data entry and terminates processing of the current screen.

f7 `Help` Displays the help screen associated with the current screen or field.

f8 `Previous Menu` Returns you to the last menu displayed by the system. This menu may not necessarily be the previous menu in terms of the HP ALLBASE/4GL menu hierarchy. The previous menu function key returns you to the menu you accessed the current screen from. If you selected the current screen by using function keys or the menu bypass, you may not be returned to the next higher menu in the hierarchy.

System Keys Function Key Set

By pressing the `System Keys` function key on any HP ALLBASE/4GL screen, you can display four sets of function keys. These are the *system keys* function key set, the *name recall keys* function key set, and two *more keys* function key sets.

Pressing the `System Keys` function key on an administrator screen loads the following set of function keys:

f1 `Main Menu` Returns you to the administrator main menu.

f2 `Name Recall` loads a set of function keys that let you scroll through the item names that have been defined for an active field.

f3 `Clear Screen` Clears all fields on the current screen.

f4 `Refresh Screen` Repaints the current screen image, including the contents of all fields.

f5 `Previous Keys` Reloads the standard set of function keys for the screen.

f6 `More Keys` Loads the second set of system keys. Refer to More Keys Function Key Set below.

f7 `Help` Displays the help screen associated with the current screen or field.

f8 `Previous Menu` Returns you to the last menu displayed by the system.

Name Recall Function Key Set

These keys enable a context-sensitive name recall function. If the active field on a screen has a defined field type and item names associated with the field, the developer can use this set of function keys to recall the item names one at a time in the active field, to complete partially entered item names, or to access a catalog display screen that lists all of the names for a type or all the available types.

f1 `First Item` lets you return to the first item in the group.

f2 `Previous Item` lets you return to the previous item in the group.

f3 `Next Item` lets you see the next item in the group.

f5 `Previous Type` changes the display to the previous item type.

f6 `Next Type` changes the display to the next item type.

f7 `Help` displays the help screen for this screen.

f8 `Restore Field` restores the original field display.

More Keys Function Key Set

If you have pressed the `System Keys` function key to load the *system keys* function key set, then pressing the `More Keys` function key loads the following function key set:

f2 `Screen Printing` displays the screen printing keys, allowing you to print an image of the current screen on the system printer or on a slave printer attached to your HP terminal.

f2 `Op. System` Temporarily suspends HP ALLBASE/4GL processing and runs the MPE/iX command interpreter. When you exit from the command interpreter program, HP ALLBASE/4GL processing resumes at the point where you suspended it.

f3 `ISQL` Suspends HP ALLBASE/4GL and invokes HP ISQL.

f4 `ALLBASE QUERY` If HP ALLBASE/QUERY is installed on the system, pressing this key temporarily suspends execution of HP ALLBASE/4GL and starts HP ALLBASE/QUERY. HP ALLBASE/QUERY automatically connects to the current application's database. When you exit from HP ALLBASE/QUERY, you are returned to HP ALLBASE/4GL.

If the current application has an open HP ALLBASE/SQL transaction when you press this function key, HP ALLBASE/4GL displays a warning message, allowing you to complete or reverse the transaction before starting HP ALLBASE/QUERY.

f5 `Previous Keys` Reloads the previous function key set.

f6 `Catalog Display` Displays the catolog display screen for the application currently being viewed.

f7 `Help` Displays the help screen associated with the current screen or field.

f8 `Exit` Terminates the current HP ALLBASE/4GL session.

Entering and Editing Data

When HP ALLBASE/4GL displays a data screen, it highlights the first data input field and positions the cursor at the first data entry column in the field. You can enter data from the keyboard into the highlighted field.

HP ALLBASE/4GL accepts input from the terminal using the MPE/iX format mode. This means that HP ALLBASE/4GL does not process any of your input until it receives a carriage return or tab character. Keep this general rule in mind as you enter and edit data on HP ALLBASE/4GL data screens.

Editing a Field

You can use any of the following terminal keys to edit data or to move the cursor within a data entry field:

- The (Insert char) key toggles insert mode on or off. When you are in insert mode, typing a character inserts the character in front of the cursor, between existing characters. This causes all characters to the right of the cursor to move across the field by one character (up to the end of the field) each time you insert a character. Characters moved past the end of the field are lost.
- The (Delete char) key deletes the character at the cursor.
- The (Back space) key moves the cursor one column to the left within the current field. Moving the cursor back past the left edge of the field normally has no effect on the field.
- The (cursor left) key moves the cursor one column to the left within the current field. Moving the cursor back past the left edge of the field has no effect on the field.
- The (cursor right) key moves the cursor one column to the right within the current field. Moving the cursor past the right edge of the field has no effect on the field.

Note

If you enter data after moving the cursor outside the current field, the cursor is immediately returned to the start of the field and the data entry begins from there.

- The (Clear line) key clears the current field from the cursor position to the right end of the field.
- The (Clear display) key clears the current field from the cursor position to the right end of the field. If you press the (Return) key immediately following the (Clear display) key, HP ALLBASE/4GL also clears all input fields from the current field to the bottom of the screen.
- The (Insert Line) (Return) key sequence moves the contents of the current field to the next field to the right of, or below, the current field, provided that the next field has the same edit code and length as the current field. The current contents of the next field are shuffled to the following field if the same conditions apply. The contents of the last field in the sequence are lost.
- The (Delete line) (Return) key sequence deletes the contents of the current field. If the next field to the right or below has the same edit code and length as the current field, this key shuffles the contents of the next field into the current field.

Committing a Field Entry

Complete each field by entering the required data and pressing one of the keys listed below to initiate a field commit action. When you initiate a field commit action, the system processes the current field entry and activates the next appropriate field.

If the field commit action you initiate commits the last field on the screen, the system processes the data in the field and then displays a message asking you to press the `Commit Data` function key.

The (Return) Key

The (Return) key initiates a field commit action for the current field and moves the cursor to the start of the next field in the tabbing sequence. If there is no input field past the current field, the current field is processed and the cursor remains on the current field.

The (Tab) Key

Pressing the (Tab) key initiates a field commit action for the current field and moves the cursor to the start of the next field in the tabbing sequence. If there

is no input field past the current field, the current field is processed and the cursor remains on the current field.

Correcting Mistakes

If you attempt to commit a field that contains invalid data, HP ALLBASE/4GL displays an error message and highlights the field. If you wish, you can clear the field and move the cursor to a previous field. You cannot move the cursor past the field containing the invalid data.

Moving Between Data Fields

By using the cursor keys, the Shift Tab key combination followed by Return, or a touchscreen, you can move to a data field other than the next one in the normal forward sequence.

Cursor Control Keys

- You can use the cursor up, cursor down, cursor left, and cursor right keys to move the cursor to a position outside the current field. When you press the Return key, the current field is committed and the field closest to the cursor becomes the current field. If you enter any data after moving the cursor but before pressing the Return key, the cursor movement is ignored and the new data is entered from the first column of the current field.
- The cursor home Return sequence initiates a field commit action for the current field and moves the cursor to the first input field in the tabbing sequence.
- Pressing Shift and cursor home together followed by Return initiates a field commit action for the current field, and moves the cursor to the last input field in the tabbing sequence. If the cursor is already at the last field in the tabbing sequence, the field is processed and the cursor remains on the current field.

The Shift Tab Combination

Pressing Shift and Tab together followed by Return initiates a field commit action for the current field, and moves the cursor to the start of the previous field in the tabbing sequence if the cursor is at the first column of the current field.

If the cursor is not at the first column in the current field, the system moves the cursor to the first column in the field. In this case there is no need to press the Return key to initiate the movement. Since the cursor does not leave the current field, a field commit is not initiated.

HP Touchscreen Terminals

Touch the screen at or near the field where you want to enter or edit data. HP ALLBASE/4GL responds to this request immediately. The current field is committed and the field closest to the point you touch becomes the current field and is highlighted.

Committing Screens

When you finish entering data on a data screen, press the `Commit Data` function key to confirm your entries and terminate processing of the screen. If you don't commit the data for a screen, HP ALLBASE/4GL ignores all your entries for the screen.

When you press the `Commit Data` function key, the system initiates a field commit action for the current field (that is, the field occupied by the cursor) if it hasn't already been committed, or if it contains data that is different from the data it contained at the time of the last field commit action for the field.

Using the Name Recall Function

The context-sensitive name recall facility available on developer screens and administrator screens helps you maintain consistency in item and field names.

Activating the name recall facility puts the system into search mode. When in search mode, the function keys let you search through item names, change the display to another item type, and access the item name catalog. The message "`Search mode [type]`" appears on the screen's message line.

To search item names

1. To see the next or previous item, choose the `Previous Item` or the `Next Item` function key.

2. To return to the first item, choose the `FirstItem` function key.

3. To search the list for another item type, choose the `Next Type` or the `Previous Type` function key.

4. To search alphabetically through the current list of item names, press the `Next Item` key.

   If the selected field has no item names defined, the following message appears on the message line: "`Search mode [type] WARNING: No items found.`"

Note

The item names are a list of items that are already defined for that item type. They may not always represent the correct choices for that particular field.

Using Name Completion

In addition to search item names, the name recall facility includes a name completion function. When you enter a partial name in a field, the name completion function attempts to complete the field with an existing name defined for that item type.

To use the name completion facility:

1. Type the first word or partial word of the item name you want to search for at the active field.

   You can type part of a valid identifier sequence (a letter followed by an alphanumeric sequence or an underscore) in the field.

   The name must be a valid name already defined for the current ALLBASE/4GL application.

2. Press the `Next Function` key.

   The field is completed, if possible, from the defined names for that field's item type. For instance, if you are in a field that requires screen names, the defined names are screen names.

3. If the name completed is not the desired name, you may browse through other names by pressing the `Next Item` or `Previous Item` function keys.

   The keys scroll you through the list of all possible item names in alphabetical order, even if the names do not match the text pattern originally entered.

Note that name completion is performed only for the right-most text in the field (that is, the right-most alphanumeric characters after a non alpha-numeric character other than - or *). Other text is ignored. For example, you can complete the record name in a field that accepts both a file name and a record name (for example, *file.record*). In this case, HP ALLBASE/4GL will default to the defined files for the search since the field is defined for a file.

To search through the Records, you must switch the item type. While performing name completion for the records, HP ALLBASE/4GL will display the first record layout that matches the text entered, which may or may not be a record defined for the file specified.

Checks are made for the amount of space left within the field before completion is allowed. If there is not enough space in the field to complete the name based upon the longest possible name for the current item type, HP ALLBASE/4GL will display a message saying there is not enough room in the field. This condition should never occur if you search for names having the same item type as the current field; however, it might occur if you have changed the item type for the search.

Using Catalog Display Function

Within the `developr` environment, name recall also allows you to use the catalog display function to display all defined names for an item type.

To show all item names for the active field

1. Choose the `Catalog Display` function key to show the names of all items for the item type indicated.

   The display changes to a screen similar to the Catalog Display screen showing all of the items defined for the type.

2. Press the Return key or choose the `Previous Screen` function key to return to the original screen.

Returning to Non-Search Mode

To return to non-search mode, complete the current field (usually by pressing the Return key). The function keys revert back to their previous values and normal data entry can resume.

Note

Some fields cannot be left blank. If you cannot find an existing item name and press the Return key to continue, this message may appear:

```
This is a required field -- it must not be left blank.
```

Enter an item name in the field to continue.

Using the Tab Key for Name Recall

In addition to using the system function keys to activate name recall, you can also insert the *-n* option into the command line used to start HP ALLBASE/4GL. This option activates the tab key for use with name recall.

Once activated for name recall, the tab key puts you into search mode when you are in a developer screen (such as the Field Specification screen) and the cursor is on a field where name recall is applicable.

In search mode, the tab key lets you access item names in two ways:

1. If you do not type anything in the field, pressing the tab key will show the first item name (if any) defined for the field type.
2. If you have filled in the field with at least one or more characters that begin a valid entry for the field, pressing the tab key will cause the name recall facility to complete the item name.

Pressing Shift—Tab in search mode returns you to the front of the field. Pressing Shift—Tab a second time returns you to normal mode.

Using On-Line Help

On-line help is available throughout the administrator application.

To use the on-line help, simply press the `Help` function key. HP ALLBASE/4GL then displays the appropriate help screen.

HP ALLBASE/4GL help screens are associated with each field on data input screens. There are also general help screens for each data screen, and for menu screens.

In many cases, the help screens have more than one "page". You can step forwards or backwards through the help screens using the function keys on the help screens.

HP ALLBASE/4GL displays some or all of the following function keys with help screens, depending on their relevance:

f1 `Field Desc` HP ALLBASE/4GL displays this key if the current help screen is associated with an input field that uses a dictionary field specification. When you press this key, HP ALLBASE/4GL displays the details of the dictionary field specification.

f2 `Display Range` HP ALLBASE/4GL displays this key if the current help screen is associated with an input field that has a validation range defined for it. If you press this function key, HP ALLBASE/4GL displays the validation range.

f3 `Display Table` HP ALLBASE/4GL displays this key if the current help screen is associated with an input field that has a validation table defined for it. If you press this function key, HP ALLBASE/4GL displays the contents of the validation table.

f4 `Screen Help` HP ALLBASE/4GL displays this key if the current help screen is associated with an input field on the screen. HP ALLBASE/4GL displays the help screen associated with the current screen when you press this key.

f5 `Previous Help` HP ALLBASE/4GL displays this key if there is more than one page of help for the current screen or field, and you are on the second or subsequent page. Pressing this key redisplays the previous page of help.

(f6) `More Help` HP ALLBASE/4GL displays this key if there is a further page of help linked to the current help screen. HP ALLBASE/4GL displays the next page of help when you press this key.

(f8) `Exit Help` When you press this key, HP ALLBASE/4GL restores the original screen display and resumes processing at the point where you asked for help.

Printing Screen Images

HP ALLBASE/4GL allows you to print a screen image on an MPE/iX system printer, or a slave printer attached to the terminal.

You can print a screen image using the `Screen Printing` function keys set, which you can access by pressing the `System Keys` function key.

You can also print the current screen image by pressing (CTRL) and (P) together, followed by (Return). If you use this method of screen printing, the destination printer depends on the value of the MPE/iX variable HP4SCREEN_PRINT. By default, HP ALLBASE/4GL writes the screen image to the formal file designator HP4REP if this variable is undefined. You may also need to set the MPE/iX variable HP4INV_PRT_CHAR for accurate printing. Refer to appendix Appendix C for more information about MPE/iX variables.

Signing Off

At the end of your HP ALLBASE/4GL session, use the `Previous Menu` function key to return to the administrator main menu. Press the `Sign On Screen` function key to return to the sign-on screen.

To exit completely from HP ALLBASE/4GL, you can now press the `Exit` function key. This returns you to the MPE/iX operating system.

You can also exit from HP ALLBASE/4GL by pressing the `System Keys` function key, and then pressing the `More Keys` function key and the `Exit` function key.

3

System-Wide Specifications

HP ALLBASE/4GL allows you to define certain system-wide items from within the administrator.

These items are:

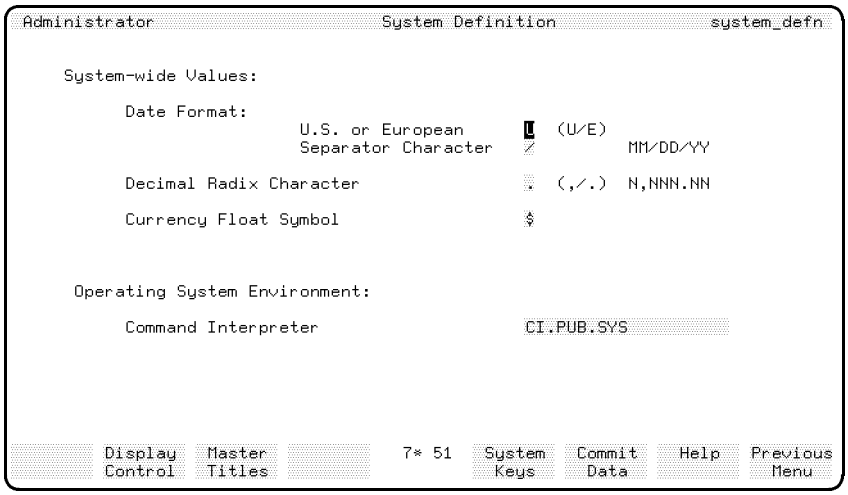
- Definitions such as:
  - the date format, decimal number format, and the currency symbol.
  - the default MPE/iX command interpreter program.
- Site synonyms for logic command names and communication area names.
- System-wide master titles.
- Terminal display enhancements for your site.

All of these facilities are accessible from the system-wide specifications menu in the administrator. To display this menu, select the *System Specs* option on the administrator main menu.

System Definition

The various system definition facilities are accessible from the system definition screen. To display this screen, select the *System Definition* option on the system-wide specifications menu.

Most likely, you will only need to use the system definition facilities when you're setting up HP ALLBASE/4GL for the first time. Even then, you will only need to change these specifications if the released defaults don't suit your particular needs.



This screen has two functional areas. The top group of fields allow you to define the date format, decimal radix character, and the currency symbol. The last field allows you to enter the name of the default MPE command interpreter program.

The following sections describe the meanings of these fields and the acceptable entries for them. When you've completed your entries for these fields, press the `Commit Data` function key to confirm your entries and terminate the screen.

System-wide Values

Date Format

HP ALLBASE/4GL can present dates on reports and screens in either US or European date format. The US date format is MM/DD/YY, and the European date format is DD/MM/YY. In both cases MM represents the month, DD the day, and YY the year. The system-wide date format applies to all applications on the system.

To set the date format for the system, enter either `U` or `E` in the *U.S. or European* field on this screen.

You can also define the separator character in dates as they are displayed on screens or printed on reports. Typical examples are / or -. Enter the separator character you require in the *Separator Character* field.

Note

HP ALLBASE/4GL stores dates internally in the YY/MM/DD form, regardless of the system-wide date specification. The system-wide date format only controls the way HP ALLBASE/4GL displays dates on screens or reports, and the way data is accepted into screen fields with date type edit codes.

Decimal Number Format

The entry in the *Decimal Radix Character* field defines how HP ALLBASE/4GL prints decimal numbers on reports. The system provides two options: the English language number format *n,nnn.nn* and the European number format *n.nnn,nn*.

Enter . in the *Decimal Radix Character* field to set the system to English number format or enter , to set the system to European number format.

This entry defines the way HP ALLBASE/4GL presents numbers on reports if the application developer has specified that numbers contain numeric punctuation.

Currency Symbol

HP ALLBASE/4GL allows you to define the currency symbol that is printed before money amounts on reports. The entry in the *Currency Float Symbol* field on this screen defines the system-wide currency symbol.

The default symbol is $. To change the symbol, enter the new symbol into this field. You can enter any printable character in this field.

This entry defines the way HP ALLBASE/4GL presents money amounts on reports if the application developer has specified that the amount is printed with the currency float symbol.

Operating System Environment

The last field on the system specifications screen allows you to define the default MPE/iX command interpreter for the HP ALLBASE/4GL system.

MPE/iX Command Interpreter

The entry in this field defines the default MPE/iX command interpreter program that is executed if the user presses the `Op. System` function key.

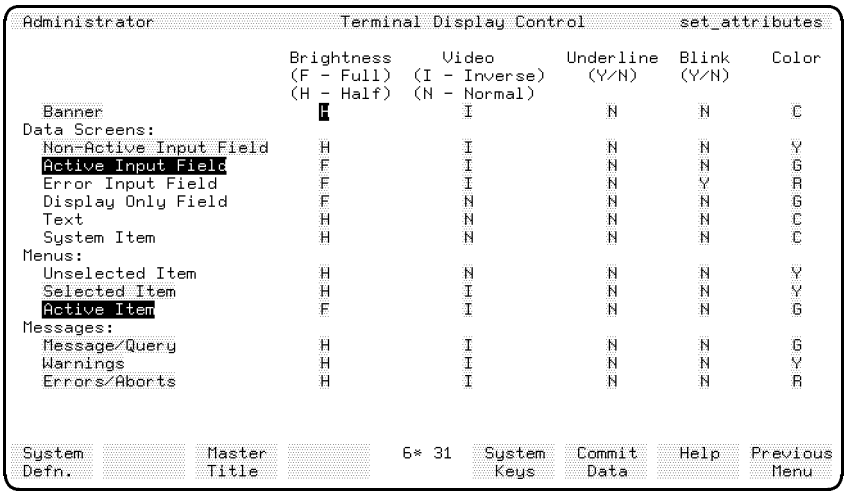
Users can execute a specific program by setting the MPE/iX variable HP4CI to the name of a program. (Users can also specify the name of a command interpreter program by setting the MPE/iX variable SHELL.) In this case, MPE/iX executes the program defined by this variable whenever the user presses the `Op. System` function key. The system only calls the command interpreter you specify on this screen if the HP4CI (or SHELL) variable is not set.

If you're not sure what to enter in this field, leave it as *CI.PUB.SYS* (the released default). This is the standard MPE/iX command interpreter, and you can be confident that it will be available on your system.

Terminal Display Enhancements

HP ALLBASE/4GL lets you control the way terminals used on the HP ALLBASE/4GL system display screen items.

To change the terminal display attributes, select the *Terminal Display Control* option on the system-wide specifications menu. This selection displays the terminal display control screen.



HP ALLBASE/4GL can display any item in full bright normal video, half bright normal video, full bright inverse video, or half bright inverse video. Each item can be displayed underlined or blinking. If your system uses color terminals, you can set the color of items on the screen, but in this case, the terminals may ignore the half-brightness attributes.

To change the display attributes, enter the characteristics you want for the item type you want to change. You don't need to change the display highlighting if you're happy with the released defaults.

If you want to define the color of an item, enter one of the following codes for that item:

R	Red
G	Green
B	Blue
Y	Yellow
C	Cyan (light blue)
M	Magenta
W	White

If you don't select a color for an item, HP ALLBASE/4GL displays the item in white.

Be careful with the color blue. On some color terminals it appears very dark, and can be quite hard to read. If you're using a color terminal while you set the display attributes, you'll be able to judge for yourself. But be careful if you are working at a monochrome terminal, and other users on the system have color terminals. If you're not sure about using blue, use cyan (light blue) instead.

As you make your entries and move off the field, the item titles at the left side of the screen take on the attributes you have selected. This allows you to assess the appearance of your selections. Press the `Commit Data` function key when you have completed your entries.

The screen image displayed here shows the released default settings.

Synonyms

HP ALLBASE/4GL allows you to define synonyms for the names of all logic commands and the names of communication area fields. Appendix A contains a list of standard logic command names. Appendix B contains a list of the communication area field names.

The logic command names synonyms screen allows you to disable particular logic commands for your site.

Using Synonyms

Using site synonyms allows you to customize the name of the commands or communication area fields to suit the needs of your site.

However, you do need to be careful with site synonyms if you are using the same applications on two or more HP ALLBASE/4GL sites. If you do use synonyms, both sites must use exactly the same synonyms or the applications will probably fail.

Synonym definitions are not unloaded with the application when you use the unloading facility.

Application developers cannot use synonyms to define system items on screens or reports.

Defining Synonyms

To define a synonym for a logic command name, select the *Logic Command Synonyms* option on the system-wide specifications menu. This selection takes you to the logic command synonyms screen. Enter the standard command name on this screen, and your chosen synonym. Press the `Commit Data` function key to confirm the entries.

To define a synonym for a communication area field name, use the same procedure with the communication area synonyms screen.

Disabling Logic Commands

The *Permitted at this site?* field on the logic command synonyms screen allows you to disable a command. Enter `N` in this field to disable the command. The entry in this field defaults to Y.

This facility allows you to impose a strict development regime by restricting application developers to a selected set of logic commands. However, you need to be careful if you decide to disable any of the HP ALLBASE/4GL logic commands for your site. If you have disabled any logic command at your site, any applications from other sites that use the disabled command may fail.

If you disable a command, the synonym for that command (if you have defined one) is deleted.

Master Titles

HP ALLBASE/4GL allows you to define master titles that can be used by all application developers on the system. A master title is a literal string that application developers can use on application screens or reports via the screen painter, the report painter, and some logic commands.

Typically, you would use a master title to define a common heading or title such as a company name or department name for all applications on the system. Each developer can define application titles within their own applications, so there is no need to use master titles for titles that are only used in one application. If the developer defines a local application title with the same name as a master title, then for that particular application, HP ALLBASE/4GL uses the local application title in preference to the master title.

HP ALLBASE/4GL automatically reflects any changes you make to a master title through all applications that use the title.

Defining a Master Title

To define a master title, select the *Master Titles* option from the system-wide specifications menu. This selection takes you to the master title definition screen.

You must give the title a name. This name must start with an alphabetic character, and can have up to 16 characters. The name can use alphabetic characters, 0 to 9, and _ (underscore). Like all other names, HP ALLBASE/4GL is case sensitive with respect to master title names.

Enter the text for the title in the *Contents* field. You can use any printable characters. Don't use quotes (") unless you want the quotes to be part of the title.

4

System Security

The HP ALLBASE/4GL system administrator controls all aspects of system security.

HP ALLBASE/4GL allows you to apply security restrictions to the system users at a number of different levels in addition to the normal user security provisions of the MPE/iX system.

The various levels of security are:

- MPE/iX user security.
- HP ALLBASE/4GL user access control.
- Application or version access control, including:
  - Development security for applications.
  - End-user access control.
  - Training mode.
  - End-user menu item security.
- Database access control.

Before you actually implement the security provisions for your site, it's worth spending some time planning your needs. Even if you don't have any confidential files or applications, appropriate security arrangements may help prevent accidental damage to application or system files.

MPE/iX Security

Before any user can sign on to HP ALLBASE/4GL, the user must be able to log in as a user on the MPE/iX system.

As well as being the HP ALLBASE/4GL system administrator, you may also be the MPE/iX system manager. The MPE/iX system manager can assign MPE/iX user names to system users. The system manager can also specify that users must enter a password to log in to MPE/iX.

Note

Setting up an automatic logon UDC for an HP ALLBASE/4GL user does not restrict the user to the HP ALLBASE/4GL system. Any user who has access to HP ALLBASE/4GL can gain access to MPE/iX through the `Op. System` function key available in HP ALLBASE/4GL. Application developers can disable this feature if required.

The MPE/iX system manager can restrict a user's access to files and accounts that the user does not own, or that are not part of the HP ALLBASE/4GL system.

HP ALLBASE/4GL User Types

HP ALLBASE/4GL has three types of users. They are:

- The system administrator.
- Developer users.
- Application end users.

You can assign user names to all users other than yourself as system administrator (the user name *administ* is reserved for the system administrator). In addition, for all user types, you can specify that the user must enter a password to sign on to HP ALLBASE/4GL.

HP ALLBASE/4GL User Capabilities

The different types of HP ALLBASE/4GL users have different capabilities. To help you decide how to set up your HP ALLBASE/4GL system, the following paragraphs summarize the capabilities of each type of user.

System Administrator

Whenever the system administrator signs on (using the reserved name *administ*) HP ALLBASE/4GL automatically runs the *administ* application. This application gives the system administrator the capability to access or change any of the system administrator functions. Any user who has access to the administrator application can access any part of the HP ALLBASE/4GL system.

Developer Users

When a developer user signs on to HP ALLBASE/4GL, the system automatically runs the *developr* application. Developers use this application to develop end-user applications.

HP ALLBASE/4GL developers cannot develop an application or version unless the application or version name has been defined and the developer's name is included in the list of authorized users for the application.

Developer users can use the developer application to:

- Execute any part of an application, including reading data files and writing to the application data files.
- Examine any part of an application under development, or an application that has the source information present.
- Change any part of an unsecured application (that is, an application for which a development security code hasn't been defined.)
- Change any unsecured component of an application that has a defined development security code.

  A development security code prevents unauthorized developers from modifying certain items within an application.

End Users

End users can only run applications that they have been authorized to use. As system administrator, you can enter a list of authorized users for each application.

In addition to listing the names of authorized users, you can assign a password to any application. In this case, an end user cannot run the application without entering a correct user name and the correct application password.

Menu Item Security

Within each application you can secure particular menu items.

If you secure a menu item, only the end users whose names are on the list of authorized users can execute the menu item. If you don't secure a menu item, all authorized users for the application can execute the item.

Training Mode

HP ALLBASE/4GL provides a training mode for new users of applications. In training mode, the user can run the application and use the application to read data from existing data files. However, the user's input is not written to the data files, and the data files cannot be changed. This feature allows a new user to "explore" the application safely.

The end-user validation screen contains a field that allows you to put the user into training mode.

Note

One of the system function keys available in end-user applications allows a user to invoke training mode voluntarily even if you haven't assigned the user to training mode. Under those conditions, the user can disable training mode at any time. However, if you place a user into training mode from the administrator application, the user cannot disable training mode.

Developer users can also invoke training mode voluntarily under the application testing option of the *developr* application. This means a developer can test a new application, or test changes to an existing application, without risking the possibility of corrupting the application data files.

Defining Users

The user validation menu allows you to access the facilities you use to define developers and end users. To access this menu, select the *User Definition and Security* option on the administrator main menu.

User Names and Passwords

All HP ALLBASE/4GL user names and passwords can have up to eight characters. Each name must start with an alphabetic character, and can use any alphabetic characters, 0 to 9, and _ (underscore).

Note

HP ALLBASE/4GL is case sensitive with respect to user names and passwords. That is, the user name *Accounts* is **not** the same as the user name *accounts*.

HP ALLBASE/4GL stores all developer names, end-user names, and user group names in a common internal table which can hold up to 254 names. Each name in the table must be unique. You must make sure that there is no duplication of names in the developer, end user and user group name set. (You can use the administrator documentation utilities to obtain lists of all the users currently defined for the system, if necessary. Refer to Chapter 6 for details of these utilities.)

Reserved User Names

There are three reserved names. The name *administ* is reserved for the system administrator, and can't be used for developers or end users. The name *developr* is reserved for the developer application. The name *hpqm* is a reserved end user name. If HP ALLBASE/QUERY is installed on the system, this user has direct access to HP ALLBASE/QUERY.

User Passwords

HP ALLBASE/4GL allows you to assign a user password to the system administrator, each developer user, and each end user. Passwords are optional, and it is up to you to decide whether you need to use passwords at your site. If you do assign a password to a user, the user cannot sign on to the system without entering the correct password.

HP ALLBASE/4GL does not allow developers or end users to change their own passwords. The only way to change a password is for you to complete the appropriate user validation screen again and give the user a new password.

Caution

You can't change a password in HP ALLBASE/4GL unless you know the current password. If you're not confident that you can remember all the passwords, keep an up-to-date list in a safe place.

Defining a Password

HP ALLBASE/4GL uses the same procedure for defining all passwords. In all cases, the definition screen contains three fields identified as *Current Password*, *New Password*, and *Repeat New Password*.

The *Current Password* field is only active if you have already defined a password. In this case, you must enter the current password in this field before you can access the *New Password* field. If you haven't defined a password for the user, the *Current Password* field is not active.

To assign a password, or to change an existing password, enter the password in the *New Password* field. HP ALLBASE/4GL does not echo the password on the screen as you type it in.

You must now reenter exactly the same password in the *Repeat New Password* field. If you make a mistake, HP ALLBASE/4GL displays an error message, and returns the cursor to the *New Password* field.

Deleting a Password

To delete an existing password, enter the current password in the *Current Password* field. You can now press (Return) twice to leave the *New Password* and *Repeat New Password* fields blank. Press the `Commit Data` function key to complete the screen.

Setting the Administrator Password

HP ALLBASE/4GL regards the system administrator as a special case developer user.

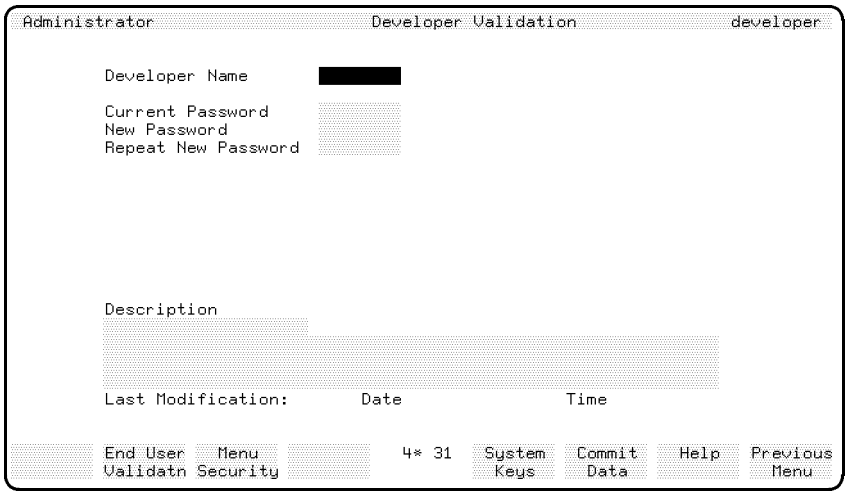
The procedure to define or change the system administrator password is exactly the same as defining a developer user password—-except you must enter the name `administ` in the *Developer Name* field.

Caution

If you define a password for the HP ALLBASE/4GL system administrator, make sure that you can remember the password, or keep a copy in a safe place. If you forget the system administrator password, you will not be able to access the HP ALLBASE/4GL system to change or delete the password.

Defining a Developer User

To define a developer user, select the *Developer Validation* option on the *Users* menu. This selection takes you to the developer validation screen.



To complete this screen, you must enter a developer name, optionally define a password, and enter a description of the developer.

Enter the developer name in the *Developer Name* field.

Note

To allow a developer to test an application as an end user, you must assign the developer an end-user name as well as a developer name. The two names cannot be the same.

Description Fields

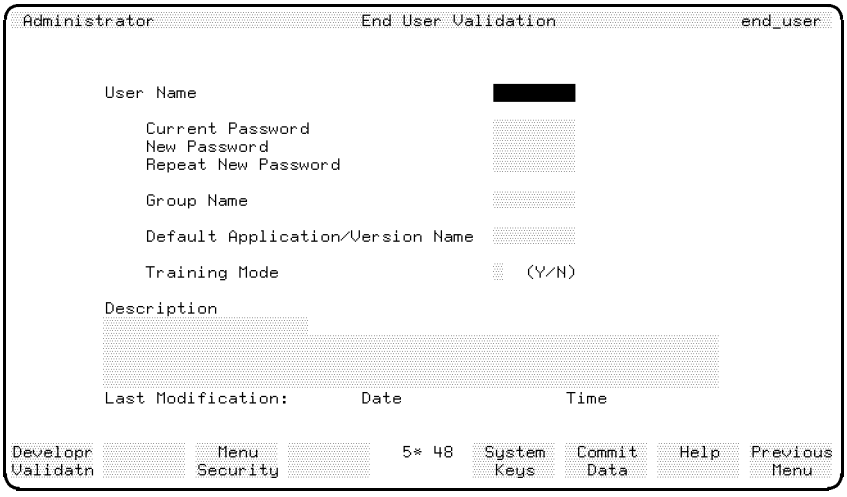
The description fields are required fields. You must complete them to complete this screen.

The entries in the description fields default to the developer name, but you'll find it easier to keep track of things if you enter a more complete description.

HP ALLBASE/4GL automatically records the time and date of the last modification.

Defining an End User

To define an end user, select *End User Validation* from the user validation menu. This selection takes you to the end user validation screen.



The procedure for entering an end-user name and password is the same as the procedure for entering developer names and passwords.

The screen contains additional fields that allow you to place the end user in a user group, define a default application for the user, and place the user in training mode.

User Groups

You can assign end users to a user group if you wish, although there is no necessity to do so. Assigning users to groups can simplify the tasks of assigning users to applications and defining menu item security.

To assign an end user to a user group, enter the group name in the *Group Name* field. A group cannot have the same name as a developer or an end user.

There is no specific limit to the number of users that can be placed in a user group. However, HP ALLBASE/4GL stores all developer names, end-user

names, and user group names in a common table. This table can contain up to 254 entries.

Default Applications

HP ALLBASE/4GL allows you to specify the name of a default application or version for each end user. When the end user signs on to HP ALLBASE/4GL, the system displays the default application or version name in the *Application or Version* field on the sign-on screen. The user can type over this name to run a different application or version.

If you want to assign a default application or version to a user, enter the name of the application or version in the *Default Application/Version Name* field. This field is optional so you can leave it blank if you wish. The application or version does not need to exist at the time you complete this screen.

Training Mode

Enter `Y` in this field if you want to place the end user in training mode. In training mode, the user cannot write to the application data files. If you place a user in training mode by entering Y in this field, the user cannot disable the training mode.

Applications and Versions

HP ALLBASE/4GL supports two types of end-user applications, referred to as base applications and versions. A base application is an application that is complete in itself and contains all the necessary logic. A version is an additional set of parameters that operates in conjunction with an application to modify it to suit the needs of a particular user, or group of users.

A version is not complete in itself. HP ALLBASE/4GL only stores the parts of the application that have been modified with the version. This allows a developer to create a version of an application without copying the entire application. In addition, HP ALLBASE/4GL automatically implements changes made to items in the base application (with some exceptions) in the version unless a copy of the item exists in the version.

You cannot define a version unless the base application exists, and you cannot run a version unless the base application exists on the same HP ALLBASE/4GL system.

The *HP ALLBASE/4GL Developer Reference Manual* contains more details about applications and versions.

Defining Applications and Versions

Before a developer can develop an application or version, you must complete the application or version definition, and include the developer's name in the user list for the application. You can optionally define a development security code for the application or version.

To allow an end user to run an application, you must include the user's name or group name in the list of users for the application.

You can also define passwords for applications or versions. End users cannot run the application unless they enter the correct password when they sign on to HP ALLBASE/4GL.

Within an application or version, you can use the menu item security system to restrict certain menu items to selected end users, or groups of end users.

If an application will access an HP ALLBASE/SQL or HP TurboIMAGE/iX database, you must specify that the application may access the database. Before an HP ALLBASE/SQL database can be accessed by an application, the database name, and an SQL owner group (if necessary), must be specified on the application definition screen. HP TurboIMAGE/iX databases can be defined on the database definition screen, and then associated with an application using the parameters for database access screen.

Application and Version Names

Application and version names must be valid MPE/iX file names. A name can use the characters *A* to *Z*, and *0* to *9*. HP ALLBASE/4GL uses the application or version name as the name for the application definition file that is created during the application unloading process and the database module file that is created during application generation.

HP ALLBASE/4GL is case sensitive with respect to application names, even though MPE/iX file names are not case sensitive. This means that you must be careful about the application and version names that you use. For example, HP ALLBASE/4GL would regard the two names *accounts* and *ACCOUNTS* as being distinct. However, the application definition file and the database module file for both applications would have the name *ACCOUNTS*.

You cannot use reserved application names for other applications or versions. The names *developr* and *administ* are reserved for the HP ALLBASE/4GL developer and administrator applications. *HPLIBnnn* and *ULIBnnn* (where *nnn* is the three-digit language identifier) are reserved for storing *developr* module builder templates. *HPlogo* and *hpqm* are also reserved application names.

Development Security Codes

Development security codes provide application developers with a means of preventing unauthorized modifications to applications.

When HP ALLBASE/4GL runs an application, some of the information that defines the application (in effect, the application source code) must be available at run-time. A site that has access to the HP ALLBASE/4GL *developr* can potentially change this information, possibly causing the application to operate incorrectly.

The application unload facility in the administrator utilities menu gives you the option of deleting the source code that is not required at run time from the application when you unload it for transport to another site. However, the source information for some application components must still be present. These components can be protected by a development security code.

If you define a development security code for an application or version, the original developer can set a *secured* flag on items in the application to prevent unauthorized modification. These items can then only be modified by a developer who has signed on to the application under the correct development security code. Other developers can examine the items, but can't change them. The following items can be secured:

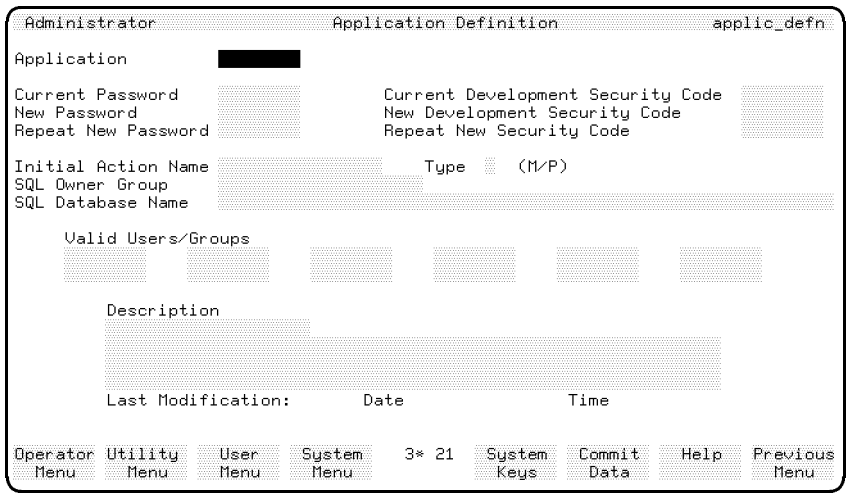
- Field specifications.
- Record layouts.

- Validation ranges.
- Validation tables.
- Scratch-pad field name declarations.
- Screens.
- Reports.
- Decision tables.

Other application components such as functions and processes only need to be available at the run-time site in generated form. These components are automatically protected if the application is supplied with source information deleted.

Defining an Application

To define an application, select the *Application Definition* option on the administrator main menu. This selection takes you to the application definition screen.



Application Name and Password

Enter the name of the application in the *Application* field. If you want to define a password for the application, enter the password in the *New Password* field, and then reenter the same password in the *Repeat New Password* field. HP ALLBASE/4GL does not echo your entry in either of these fields.

Reserved Application Names

The application name *HPlogo* is reserved for storing HP ALLBASE/4GL sign-on screen logo windows. Developers can use the *HPlogo* application for storing customized sign- on screen windows. The application names *HPLIBnnn* and *ULIBnnn* (where nnn is the three digit language identifier) are reserved for storing *developr* module builder templates. The name *hpqm* is also reserved. If HP ALLBASE/QUERY is installed on the system, this application allows direct access to HP ALLBASE/QUERY.

You may alter the definitions of these reserved applications, but do not use these names for new applications.

You cannot use the *administ* and *developr* reserved names.

Initial Action Name

The initial action in any application must be a menu or a process. HP ALLBASE/4GL automatically executes the initial action when an end user signs on to the application.

HP ALLBASE/4GL needs the name and type of the initial action of the application to start executing it. You must enter the name of the initial action in the *Initial Action Name* field, and enter either `M` or `P` in the *Type* field to indicate whether the action is a menu or a process.

SQL Owner Group

If the application uses an HP ALLBASE/SQL database, you must enter the name of the SQL owner group. SQL owner group names can use the characters A to Z, 0 to 9, and _ (underscore). HP SQL is **not** case sensitive with respect to owner group names.

SQL Database Name

If the application uses an HP ALLBASE/SQL database, you must enter the name of the HP ALLBASE/SQL DBEnvironment configuration file (DBEConfile). You can specify a fully qualified file name in the form *FILE.GROUP.ACCOUNT*. If you don't specify a fully qualified file name, HP ALLBASE/4GL appends the current value of the variable HP4SQLPATH to the name of the file you specify when the database is accessed.

Valid Users and Groups

Enter the names of the users or user groups for the application. You can specify that all system users are valid users for the application by entering `*ALL` in this field.

Alternatively, you can enter up to 12 user names or user group names. There is no limit to the number of users in each user group as long as the total number of developer names, user names, and group names doesn't exceed 254.

Note

If you don't specify the valid user list as being *ALL, remember to include the developer's name in the user list.

You may also need to allocate an end-user name to the developer and enter it in the user list. If you don't, the developer won't be able to test the application as an end user. The developer's end-user name and developer name cannot be the same.

Entering a Development Security Code

If you're defining a new application or you want to define a development security code for an existing application that is currently unsecured, the *Current Development Security Code* field is inactive.

Caution

Once you have defined a development security code for an application, you cannot change the code or remove the code unless you know the current development security code.

To define a development security code for an application, enter the code in the *New Development Security Code* field. HP ALLBASE/4GL will not echo the code to the screen as you type it in. You must then reenter exactly the same code in the *Repeat New Security Code* field.

If you make a mistake reentering the development security code, HP ALLBASE/4GL displays an error message and returns you to the *New Development Security Code* field.

If you're changing the development security code for an existing application, the *Current Development Security Code* field becomes an active input field. You must enter the current development security code for the application into this field before you can enter a new code.

Deleting a Development Security Code

To delete an existing development security code for an application, enter the existing code in the *Current Development Security Code* field. You can now press (Return) twice to step over the *New Development Security Code* field and the *Repeat New Security Code* field. Press the `Commit Data` function key to complete the screen.

Defining Versions

To define a version of an application, select the *Version Definition* option on the administrator main menu. This selection takes you to the version definition screen.

The procedure to define a version is similar to the procedure for defining an application. However, you cannot define a version unless the base application already exists.

The *Version ID* field on the version definition screen is a display-only field that shows the total number of versions defined for the same base application. You can define up to 254 versions of one application.

Menu Item Security

The HP ALLBASE/4GL menu item security system allows you to restrict the ability to select menu items in an application or version to particular users or user groups. Typically, you would use this facility to prevent unauthorized users from executing menu items that allow access to confidential files, or menu items that may be capable of initiating a potentially damaging action such as deleting file records.

If an unauthorized end user attempts to execute a menu item that you have secured, HP ALLBASE/4GL displays a message and does not allow the user to execute the item.

You can only define menu item security for an application when it has been installed at the end-user site.

The HP ALLBASE/4GL menu item security system depends on the user name list in the HP ALLBASE/4GL system files. Since the user name lists in two different HP ALLBASE/4GL systems will not be the same, menu item security definitions that are included with unloaded applications will not refer to the correct user name list when the application is loaded into the destination system. If an unloaded application does include menu item security definitions, you must redefine the menu item security when the application is loaded into the target system.

The screens used to secure menu items are accessed through the user validation menu. To display this menu, select *User Definition and Security* on the administrator main menu.

Securing a Menu Item

The process for securing an application or version menu involves several steps. First, you must nominate the application and the menu containing the items you want to secure. Then you must select the item to be secured from the menu, and finally, enter a list of names of users or user groups who can execute the secured item.

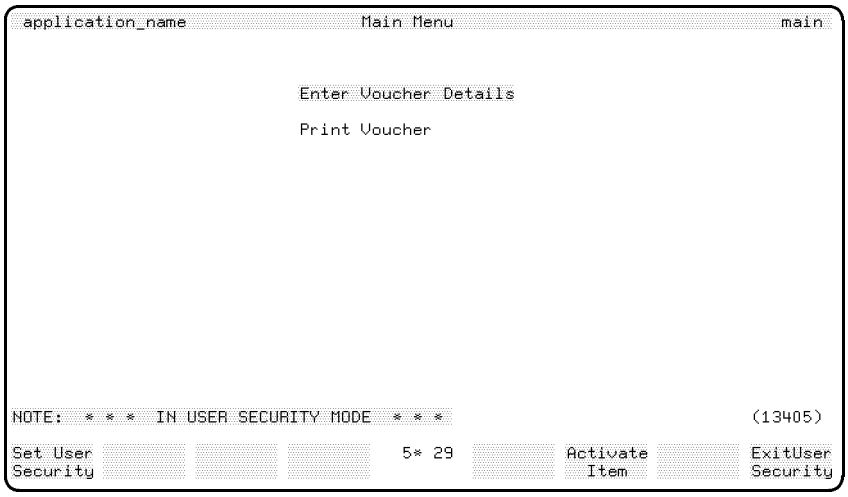
Menu Item Security Screen

First, select *Menu Item Security* from the user validation menu. HP ALLBASE/4GL then displays the menu item security screen.

On the menu item security screen, enter the name of the application and the name of the menu containing the item you want to secure.

If you want to secure several items in the application, you can specify the main menu of the application. You can then step through all the menus in the application and secure items from any or all of them without going back to the menu item security screen.

Press the `Commit Data` function key when you have entered the names of the application and the menu on the menu item security screen. HP ALLBASE/4GL then displays the menu you have specified together with a message stating that the menu is in security mode.



Example Only

The example screen above shows the main menu of the *example* application as it appears in user security mode.

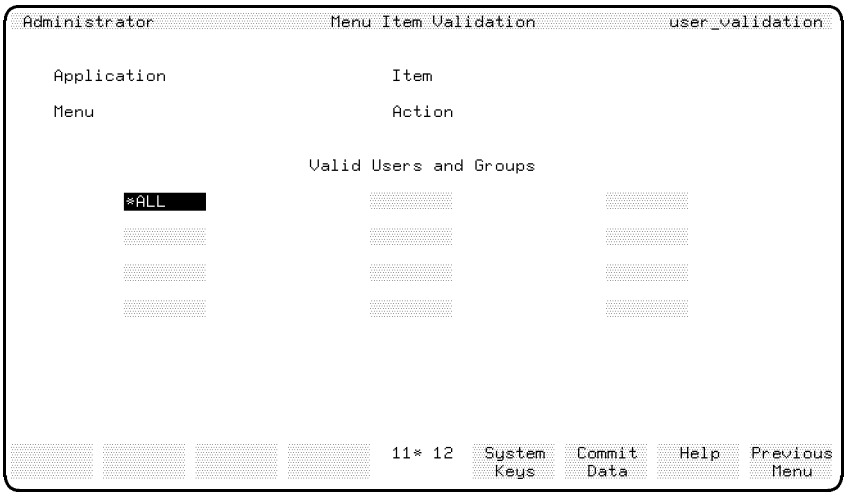
Note

The *example* application is included with HP ALLBASE/4GL and can be used to explore the various screens within the application.

While the menu is in user security mode, you can select items on the menu in the normal manner using the terminal keyboard. If any item on the menu leads to a further menu, pressing the `Activate Item` function key or (Return) executes the next menu. If the item doesn't lead to a further menu item HP ALLBASE/4GL displays the message *No further menu items for this selection.*

Select the item you want to secure and then press the `Set User Security` function key. This takes you to the menu item validation screen where you can specify the users who may access the secured item.

Menu Item Validation Screen



Example Only

The first four fields on the menu item validation screen are display-only fields. They show the name of the application or version, the name of the menu, the

name of the menu item you have selected, and the action that the selected item performs in the application.

The next set of fields shows the valid users and user groups for the secured menu item. When you first enter this screen, the first field contains the default entry *ALL. On subsequent occasions, these fields show the names of eligible users for the menu item.

You can change any of these user names by typing over them, or you can delete names from the list. Note, however, that you cannot include user names or group names in this list if they are not defined as authorized users for the application or version. That is, you can restrict access to the item, but you can't make it available to additional users.

Press the `Commit Data` function key to confirm your entries. HP ALLBASE/4GL then updates the list of valid users for the secured menu item.

By pressing the `Previous Menu` function key, you can return to the menu you are securing. You can now secure further menu items or exit from user security mode. To exit from user security mode, press the `Previous Menu` function key to return to the first menu in the application, and then press the `ExitUser Security` function key.

Limitations

The HP ALLBASE/4GL menu item security system can only secure items selected from menus. It cannot prevent users selecting items with the menu bypass facility or via function keys. This means that you **must** be careful to apply menu item security at the lowest level menus in the application. These are the menus that lead directly to the item (data screen or process) that you want to secure.

If the application menu structure allows users to access the same item from more than one menu, you must be careful to apply menu item security on every menu leading to the item.

You may also want to apply menu item security at higher levels in the application menu hierarchy. This is really only a courtesy to end users who are not entitled to select menu items at the lower levels of the hierarchy. Securing the high level choices in the menu means that non-eligible users are restricted before they have spent the time selecting several levels of menu options.

Maintaining Database Security

HP ALLBASE/4GL applications can access and maintain data in HP SQL databases and HP TurboIMAGE/iX databases. All access to these databases is subject to the normal security provisions of the respective databases.

To be able to use a database in an application, you must:

- Define the database.

  - For HP ALLBASE/SQL databases, you must define the external name of the database on the application definition screen.

  - For HP TurboIMAGE/iX databases, you must define the external name of the database and the name of the database as it will be known within HP ALLBASE/4GL on the database definition screen.

- Define database access restrictions.

  -For HP ALLBASE/SQL databases, this consists of an SQL owner group, which is specified on the application definition screen.

  -For HP TurboIMAGE/iX databases, this consists of a user class password, which is specified on the parameters for database access screen.

The following sections describe the database definition and security aspects of each database type in more detail.

HP ALLBASE/SQL Database Security

Each application may only access one HP ALLBASE/SQL database. For simplicity, the database details for an application are entered as part of the application definition details.

All access to HP ALLBASE/SQL databases is subject to the normal security provisions of HP ALLBASE/SQL. Application developers require CONNECT authority and RESOURCE authority to be able to create tables in the database environment.

End users require CONNECT authority and RUN authority for the database module for an application. End users may also require additional access authority for tables or views in the database.

The MPE/iX user who creates the database with HP ISQL automatically becomes the database administrator. This user must grant the appropriate authorities to other users.

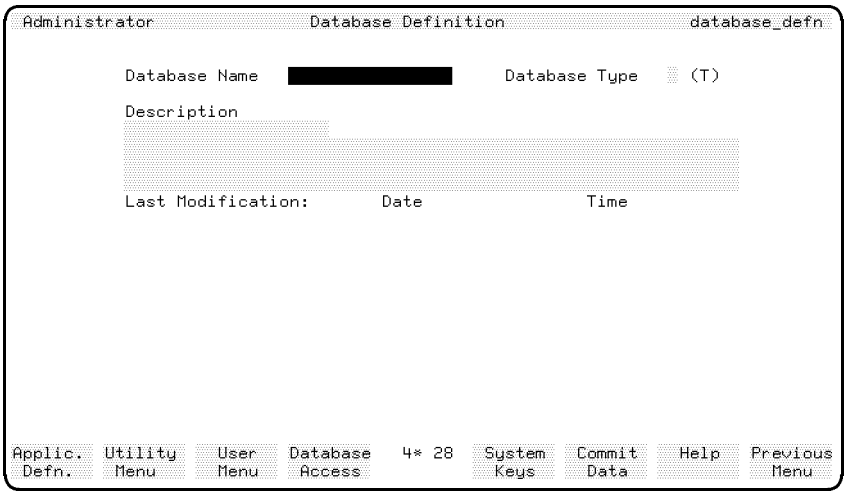
You may specify an SQL owner group for the database on the application definition screen. HP ALLBASE/4GL transfers ownership of all SQL tables created in the application to this owner group. HP ALLBASE/4GL also transfers the ownership of database modules for the application to this owner group. Don't attempt to change the name of the SQL owner group for an application after development for the application has commenced.

HP TurboIMAGE/iX Database Security

Before an HP TurboIMAGE/iX database can be used in an application, the database must be defined within HP ALLBASE/4GL and you must specify that the application may access the database.

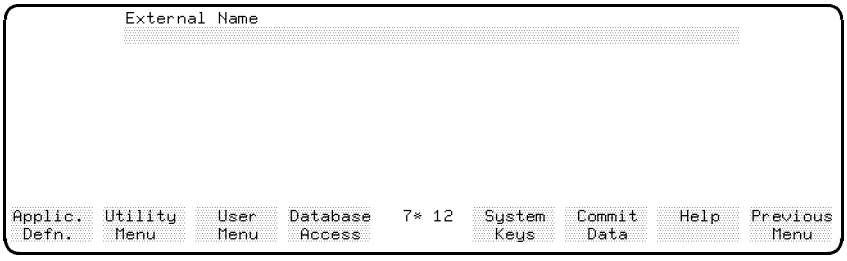
Defining an HP TurboIMAGE/iX Database

An HP TurboIMAGE/iX database must be defined on the database definition screen before any applications may access it. Select the *Databases* option on the main menu to display this screen.



To complete this screen you must enter the name that HP ALLBASE/4GL applications will use as the database name, the type of database, a description of the database, and the external name of the database. The external name must be the name of the HP TurboIMAGE/iX database root file.

The external name field appears in a window after the database type field is entered.



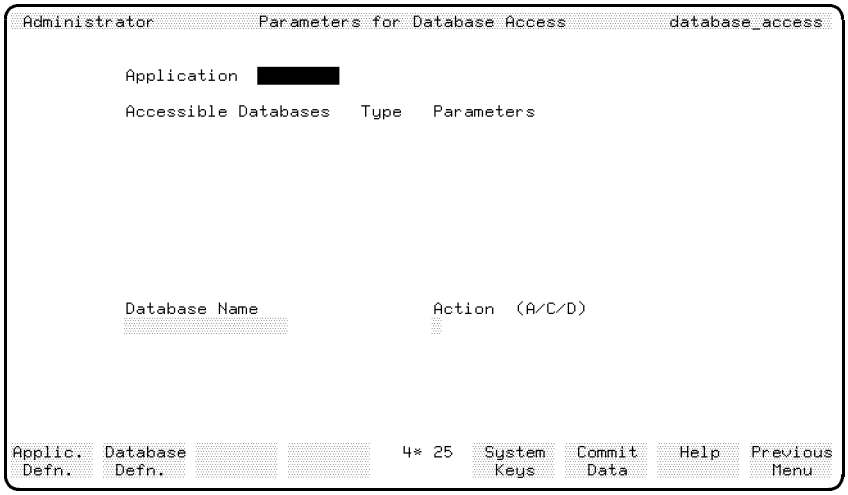
Associating HP TurboIMAGE/iX Databases with an Application

Before an application may access a database, you must specify that the application has access to the database, using the parameters for database access screen. On this screen you can also specify database access restrictions for the application.

The database access restrictions consists of a password. When an HP ALLBASE/4GL application accesses an HP TurboIMAGE/iX database, it must present a password to satisfy the HP TurboIMAGE/iX security provisions. This password must be a valid HP TurboIMAGE/iX user class password defined by the HP TurboIMAGE/iX database administrator.

The password you specify determines the HP TurboIMAGE/iX access read and write permissions for an HP ALLBASE/4GL application, and for all end users and developer users of the application.

To associate a database with an application, and to set the database access parameters, select the *DB Access* option on the main menu. This selection takes you to the parameters for database access screen.



To complete this screen, you must enter the application name. After doing so, a scroll area displays a list of the HP TurboIMAGE/iX databases that the application may currently access.

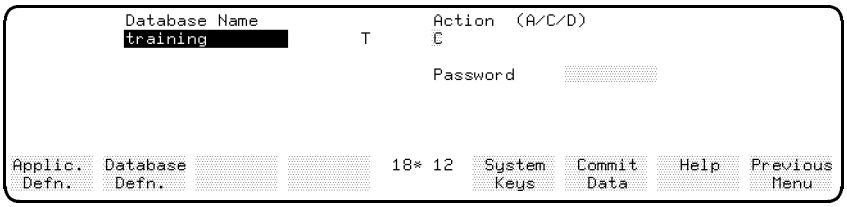
You may then add a database to the list, change the access parameters for an accessible database, or delete a database from the list.

If you wish to add a database to the list, the database name that you enter must be defined on the database definition screen.

Access Parameters

When you enter a database name, and then commit the field, a window containing the password field is displayed. If you are changing the access parameters for a database already listed on this screen, the current user access password for the database is displayed in this field.

If the database has no user access password, or you are adding a new database to the list, the password field is blank.



In the password field you can enter an HP TurboIMAGE/iX user class password that is defined by the HP TurboIMAGE/iX administrator as a valid password for a specific user class.

The password field is optional, and if you leave the field blank, HP TurboIMAGE/iX will interpret the access permissions to be those of user class zero, which has no password.

A database password only applies for the specified application. If a database is accessed by more than one application, the password may be different for each application.

FINAL TRIM SIZE : 7.0 in x 8.5 in

5

System Files

This chapter provides an overview of the various files used by HP ALLBASE/4GL, and the MPE/iX account and group structures for these files.

HP ALLBASE/4GL uses the following types of files:

- HP ALLBASE/4GL program files.
- HP ALLBASE/4GL system files.
- HP ALLBASE/SQL database environments.
- HP TurboIMAGE/iX databases.
- Application data files.

Appendix C contains a more detailed description of the MPE/iX environment for HP ALLBASE/4GL. Appendix D and Appendix E provide more information about HP ALLBASE/SQL database environments and HP TurboIMAGE/iX databases, respectively.

HP ALLBASE/4GL Program Files

HP4GLB is the program that drives HP ALLBASE/4GL. When a user logs in to the MPE/iX system and runs HP ALLBASE/4GL, this is the program that the system runs. (This program file is *HP4GLBR* in the run-time environment.) HP ALLBASE/4GL also uses a number of other executable binary files in addition to *HP4GLB*).

Normally, users run an MPE/iX command file *HP4GL* to start HP ALLBASE/4GL, rather than running the *HP4GLB* program file directly. The *HP4GL* command file sets a number of MPE/iX variables before it starts the main HP ALLBASE/4GL program.

All the HP ALLBASE/4GL program files must reside in the *PUB.SYS* group and account.

HP ALLBASE/4GL System Files

The HP ALLBASE/4GL system files (known as S-files) contain the HP ALLBASE/4GL system and the definition of the HP ALLBASE/4GL applications on the system. Each HP ALLBASE/4GL system uses a set of 11 S-files identified as S01 to S11. All files in a set of S-files must reside in the same group and account.

In effect, each set of S-files is an HP ALLBASE/4GL system. One set of S-files can support a number of applications, and a number of users on different terminals. The tasks you perform as system administrator define parameters for all applications on the one set of S-files. Each set of S-files supports the *administ* application, and must be administered by a system administrator.

If necessary, you can have more than one set of S-files on the MPE/iX system. In this case, each set of S-files must reside in a separate group although the groups may be in the same account.

In an application development environment, the S-files are the most important files in your HP ALLBASE/4GL system. Treat them with the same respect that you give to source code files for third generation language applications. They represent the results of the application developers' efforts, and should be backed up regularly.

HP ALLBASE/SQL Database Environments

HP ALLBASE/4GL allows application developers to access HP ALLBASE/SQL databases. The developer application contains facilities to create and delete HP ALLBASE/SQL tables in the database environment.

The HP ALLBASE/SQL database must exist, and developers must have RESOURCE authority to develop applications that use HP ALLBASE/SQL.

Refer to the *HP ALLBASE/SQL Database Administration Manual* for more information about creating HP ALLBASE/SQL databases.

HP ALLBASE/4GL uses the MPE/iX variable HP4SQLPATH to identify the name of the group and account that contains the DBECon file for the database environment, unless you include the group and account in the database name on the application definition screen.

Refer to Appendix D of this manual for more details about using HP ALLBASE/SQL databases with HP ALLBASE/4GL.

HP TurboIMAGE/iX Databases

HP ALLBASE/4GL allows developers to access HP TurboIMAGE/iX databases in applications. Existing HP TurboIMAGE/iX database definitions in schema files can be uploaded into HP ALLBASE/4GL applications using the HP4TUPLD and HP4ATOS utilities. Refer to Appendix E for more information about uploading utilities.

HP ALLBASE/4GL uses the MPE/iX variable HP4TIPATH to identify the name of the group and account that contains the HP TurboIMAGE/iX databases, unless the group and account are included in the external database name on the database definition screen.

Refer to Appendix E for more information about this variable, and about using HP TurboIMAGE/iX databases used with HP ALLBASE/4GL.

Application Data Files

HP ALLBASE/4GL can use KSAM (keyed sequential access method) data files and serial data files.

Data files for end-user applications can reside in any group and account. This group and account is identified by the variable HP4DATAPATH (refer to MPE/iX Variables).

Application developers can use fully qualified file names to specify the external name of a data file. If the developer does not use a fully qualified name, HP ALLBASE/4GL appends the current value of HP4DATAPATH to the file name to determine the external name of the file.

If the developer uses a fully qualified file name, HP ALLBASE/4GL uses the data file in the group and account specified by the name.

KSAM Data Files

For each KSAM data file, the data manager creates the files *name*, *nameK*, and *nameS* where *name* is the file name. The *name* file contains the data, and the *nameK* file is an index file. The file manager generates and maintains the index file automatically.

The *nameS* file contains a description of the structure of the record layout for the file. This structure file is used during the data file reformatting process.

Serial Files

Application developers can use serial files with HP ALLBASE/4GL applications. Typically, a developer would use serial files to import data from external sources, or make data available for other programs.

HP ALLBASE/4GL application serial files can have fixed length records, or variable length records.

Data File Reformatting

KSAM data files used by HP ALLBASE/4GL applications may need to be reformatted after developers have made changes to applications. If changes to applications involve changes to dictionary field specifications or file record layouts, the files must be reformatted before the modified application can use them.

HP ALLBASE/4GL provides two ways of reformatting KSAM data files. Application developers can use the *Data File Reformat* screen in the HP ALLBASE/4GL developer to reformat individual data files. Refer to the *HP ALLBASE/4GL Developer Reference Manual* for more information about the developer file reformatting facilities.

HP ALLBASE/4GL also provides an automatic system that reformats data files during the application loading process. This system is described in Chapter 6 of this manual.

MPE/iX Account and Group Structure

The standard HP ALLBASE/4GL installation uses an MPE/iX account containing a number of groups for the various HP ALLBASE/4GL system files. Appendix C describes this structure.

For most installations, there is no need to change the standard account and group structure.

If you do alter the HP ALLBASE/4GL account and group structure, you must set the MPE/iX variables appropriately. We recommend that you don't make any changes to the standard HP ALLBASE/4GL operating environment unless you are fully familiar with the MPE/iX operating system.

Note

You may adversely affect future product support and your ability to use future product enhancements if you make any changes to the HP ALLBASE/4GL operating environment.

MPE/iX Variables

HP ALLBASE/4GL uses a number of MPE/iX variables to identify the locations of the various groups and accounts used by HP ALLBASE/4GL.

The most important variables are:

- HP4DATAPATH, identifying the name of the group and account containing KSAM and serial data files for HP ALLBASE/4GL applications.
- HP4SPATH, identifying the name of the group and account containing HP ALLBASE/4GL S-files.
- HP4SQLPATH, identifying the name of the group and account containing the HP ALLBASE/SQL DBECon file.
- HP4TERM, identifying the type of terminal currently in use.
- HP4TIPATH, identifying the name of the group and account containing HP TurboIMAGE/iX databases used by HP ALLBASE/4GL applications.

The standard HP ALLBASE/4GL start-up command file sets these variables to appropriate values.

6

Administrator Utilities

The HP ALLBASE/4GL administrator has a number of utility functions for printing documentation, deleting applications or users, and loading or unloading applications.

The screens for these functions are accessible from the administrator utilities menu. To display this menu, select *Utilities* on the administrator main menu.

Administrator Documentation

The HP ALLBASE/4GL administrator documentation menu allows you to print reports listing the following items:

- Applications.
- System specifications.
- Developers.
- End users.
- Logic command names.
- Communication area names.
- Master titles.
- HP TurboIMAGE/iX database definitions.

To print a report, you must access the administrator documentation menu by selecting the *Print Administrator Documentation* option on the administrator utilities menu.

Select the type of report you want and press (Return) or the `Activate Item` function key. By default, HP ALLBASE/4GL writes the report to device class LP. The formal file designator for the report is HP4REP.

Administrator Deletions

The HP ALLBASE/4GL administrator deletions function allows you to delete the following items:

- Entire applications or versions.
- Developer user names.
- End-user names.
- Master titles.
- HP TurboIMAGE/iX database definitions.

To display the administrator deletions screen, select the *Administrator Deletions* option on the utilities menu.

To delete an item, enter the code number for the item type that you want to delete, and then enter the name of the item you want to delete. Press the `Commit Data` function key to complete the screen.

If you use this screen to delete an application, make sure that there are no versions of the application. Since a version cannot operate without the base application, all versions of the application will become unusable if you delete the base application. You can use the administrator documentation menu to print a report of the applications on the system. This report lists the names of all versions and shows the names of the base applications for the versions.

Unloading and Loading Applications - Overview

The next few pages provide an overview of the HP ALLBASE/4GL application unloading and loading utilities. Before you attempt to use these utilities, read through these pages to gain an understanding of the procedures.

The application unload and load utilities allow you to unload applications from the HP ALLBASE/4GL S-files or to load an application into the S-files.

The application unload utility unloads an application definition from the S-files into a single MPE/iX file. This file is identified as *NAME* in the group and account identified by the variable HP4APPNPATH, and *NAME* is the name of the application. The application unloading facility does not delete the original application or change it in any way. If you want to delete an application from the system, use the administrator deletions screen.

Note

You cannot create files in any account other than your login account. If the HP4APPNPATH variable is not set, or refers to a group and account that is not writable, HP ALLBASE/4GL displays an error message and the application unloading process aborts.

The application load utility reverses this process and loads an application into the S-files from a previously unloaded application file.

These functions in combination allow you to unload an application and load it into a different set of S-files, or even transport it to a different MPE/iX system.

Unloading Versions

HP ALLBASE/4GL allows you to unload up to 10 versions with an application. Note however, that you cannot unload a version without the base application.

Under some conditions, unloading run-only copies of more than one version with an application may result in data file corruption when the application and version are loaded onto the target system. If you unload two or more versions with an application, HP ALLBASE/4GL displays a warning message asking if you want to proceed with the unload.

Refer to "Version Data Files", for more information about the conditions that may result in version data file corruption.

Application Definition Records

HP ALLBASE/4GL allows you to unload an application with or without the application definition records. These records hold the details that have been entered on the application definition screen. Normally, you would include the application definition records with the application if you are unloading an application for first release to another HP ALLBASE/4GL system. This means that the application definition records are written into the S-files on the destination system when the application is loaded.

If you are unloading an application for first release to an HP ALLBASE/4GL run-time environment, you must include the application definition records with the application. The run-time environment does not allow the administrator to create new application definitions.

In general, you would not include the application definition records if you are unloading an application for subsequent release to a run-time environment. In this case, the existing application definition, which contains the user names and password definition for the application, should not be overwritten.

Run-Only Applications

You can unload a run-only copy of an application for a run-time environment without unloading the source code for generated components.

If you unload a run-only copy of an application, the generated components of the application cannot be modified after the application has been loaded to a different HP ALLBASE/4GL system. In this format, the following components of the application cannot be modified:

- Calculated items.
- Decision tables.
- Functions.
- Messages.
- Processes.

- Record layouts.
- Reports.
- Screens.
- SQL logic blocks.

Most other components in an application can be secured against modification with a development security code. Refer to Chapter 4 for more information about application security.

You can also unload the source code with the application. In this case, a developer can modify any components in the application that are not secured with a development security code.

KSAM Data Files

The application unloading and loading utilities do not unload or load any KSAM data files used by the application. To load an application to an HP ALLBASE/4GL system, you may also need to install a set of data files on the target system.

Application developers can create KSAM data files directly using the data file creation facilities in the developer application. Alternatively, you can copy a set of data files onto the system from tape, disk or cartridge. These files can be empty or can contain data.

To load an application to an HP ALLBASE/4GL run-time environment, you must also load the data files for the application from tape. Without the developer application, HP ALLBASE/4GL cannot create KSAM data files directly, so you need to load at least an empty set of data files to the data file group and account (indicated by the HP4DATAPATH variable). The HP ALLBASE/4GL run-time environment then maintains these data files.

KSAM Data File Reformatting

Under some circumstances, KSAM application data files used by HP ALLBASE/4GL applications must be reformatted during the application loading procedure.

If you are loading an application to update an existing application, the data files must be reformatted under the following circumstances:

- Dictionary field specifications have changed.
- The number of fields or the sequence of fields on any file record layouts has changed.
- The number, names, or positions of any key fields on record layout have changed.

In the HP ALLBASE/4GL developer environment, application developers can use the data file reformat screen in the dictionary menu to reformat KSAM data files. The source code for the application must be present to allow this screen to be used to reformat data files.

In the HP ALLBASE/4GL run-time environment, or in a developer environment where source code for the application is not present, the data file reformat screen cannot be used to reformat data files. HP ALLBASE/4GL provides an automatic data file reformatting system to reformat data files in these circumstances.

Note

The HP ALLBASE/4GL automatic data file reformat system can only reformat data files in the MPE/iX group and account identified by the variable HP4DATAPATH. Data files in other MPE/iX groups and accounts are not reformatted during application loading.

The automatic data file reformat system uses a file that contains information about the structure of the application data files. HP ALLBASE/4GL creates this file-structure file during the unloading process for run-only applications. This file has the same name as the application, and is created in the group and account identified by the variable HP4FSPATH. The HP4FSPATH variable must exist, and must identify a writable group before you execute the unloading process for a run-only application.

The unload utility extracts the definition of the application data files from the S-files and writes this information into the file-structure file.

The data file reformat system also uses the structure files for KSAM data files. The structure file is identified as NAMES.!HP4DATAPATH where *NAME* is the name of the file.

The actions taken by the data file reformat system depend on the presence or absence of these files. In general, there should be one file-structure file for each application, and one structure file for each KSAM data file. If the file-structure file exists, and the structure files for the data files exist, HP ALLBASE/4GL reformats the data files for the application automatically during the application loading process.

If the structure file for any application data file is not present, that data file is not reformatted. Removing or renaming the structure file for a data file is one way of preventing a file from being reformatted.

If the file-structure file is not present during the loading procedure, HP ALLBASE/4GL does not reformat any data files.

Note

To reformat a data file under the MPE/iX operating system, you must be the owner of the file.

Version Data Files

If a version uses data files that have a format that is different from the format of the data files for the base application, HP ALLBASE/4GL only reformats the version data files. The base application data files are not reformatted.

During the unloading process for run-only applications, HP ALLBASE/4GL extracts the definitions of data files from the S-files and writes the information into the file-structure file. If you are unloading a version with a base application and the version file format is different from the base application file format, HP ALLBASE/4GL only writes the version file definitions to the file-structure file. Under these conditions, the base application file definitions are not written to the file-structure file.

Caution

Don't attempt to unload more than one version of an application if the versions use different data file structures.

If you do unload multiple versions that all have different file structures, the file-structure definitions of subsequent versions are added to the file-structure file. When you load the application and versions to the target system, the version data files may be corrupted.

If you need to reformat data files for a number of versions of an application and the versions all use different data file formats, you must unload and subsequently reload the versions individually. (Note that you must unload the base application with each version. You cannot unload a version without unloading the base application.)

If you need to reformat the data files for a base application, you must load a copy of the application by itself without any versions. To do this, the application must first be unloaded without any versions.

HP ALLBASE/SQL Applications

The application unloading and loading process involves some additional functions for unloading and loading applications that use HP ALLBASE/SQL databases.

Database Module Files

The complete definition of an application that uses an HP SQL database consists of the application definition file for the application, plus the database module containing the stored sections for the application. HP ALLBASE/4GL normally creates an MPE/iX file containing the database module for an application when the application is generated, or all SQL blocks in an application are generated. The database module file for an application or version has the same name as the application or version, and is created in the group and account identified by the HP4DBMPATH variable. Note that HP ALLBASE/4GL creates one database module file for an application, and one module file for *each* version of an application.

To load an application into an HP ALLBASE/4GL system, the application definition file for the application, the database module file for the application (and the database module files for each version of the application) must be present on the destination MPE/iX system.

The HP ALLBASE/4GL application unloading utility allows you to generate an application before you unload it. This ensures that the database module files for the application are up-to-date.

Database Module Installation

During the application loading process, HP ALLBASE/4GL installs the database modules contained in the database module files into the database environment for the application. The database environment for the application should exist before you start the application loading process.

If the database environment does not exist, HP ALLBASE/4GL will display an error message during the application loading procedure. Under these conditions, HP ALLBASE/4GL displays a message allowing you to enter the name of a database environment.

Database Table Creation

During loading, HP ALLBASE/4GL automatically creates HP ALLBASE/SQL tables required by HP ALLBASE/4GL applications.

If the tables required by the application don't exist, HP ALLBASE/4GL creates them. If the tables already exist, they are not changed in any way.

HP ALLBASE/SQL Table Reformatting

HP ALLBASE/4GL does not provide facilities for reformatting HP ALLBASE/SQL tables.

If you need to reformat an HP ALLBASE/SQL table to reflect changes to field types or the structure of record layouts, you can use the HP ISQL UNLOAD and LOAD facilities. These facilities allow you to write the contents of an HP ALLBASE/SQL table to a file and then reload the file into a new restructured HP ALLBASE/SQL table.

Refer to the HP ISQL manuals for more information about using the UNLOAD and LOAD utilities.

HP TurboIMAGE/iX Applications

No extra procedures are necessary to unload applications that access one or more HP TurboIMAGE/iX databases.

HP TurboIMAGE/iX Data Set Reformatting

HP ALLBASE/4GL does not have facilities for reformatting HP TurboIMAGE/iX data sets.

If you need to reformat an HP TurboIMAGE/iX data set to reflect changes to field types or the structure of record layouts, you can use HP TurboIMAGE DBchange/XL, if it exists on your system. This tool allows you to alter the security and structure of an HP TurboIMAGE/iX database with ease.

Disk Space Requirements

The unloaded application file, the file-structure file, and the database module files (if required) for large applications may require a megabyte or more of disk space.

Make sure that you have sufficient disk space available on the MPE/iX system before you start the application unloading procedure.

When you are loading an application, the target system must have sufficient disk space to accommodate the unloaded application files.

If the loading process involves reformatting KSAM data files, you must have additional free disk space to accommodate the temporary files that HP ALLBASE/4GL creates during the reformat. You must have enough free disk space to hold a copy of the largest single data file that will be reformatted.

Unloading Procedure

To unload an application, you must display the application unloading screen by selecting the *Unload Application* option on the utilities menu.

Enter the name of the application you want to unload in the *Application* field and enter the names of any versions you want to unload with the application in the *Versions* fields. Don't attempt to unload more than one version of an application if the versions use different format data files. If you do unload more than one version with a base application, and the versions use different data file formats, data file corruption may occur when the application and versions are loaded to the destination system.

Initial Release

The entry in the *Initial Release* field determines whether the application (and version) definition records from the application (and version) header screens are unloaded with the application. These records contain the application password definition and the names of the authorized users for the application.

Normally, you would enter `Y` in this field if you are unloading an application for first release to another HP ALLBASE/4GL system.

You *must* enter `Y` in this field if you are unloading an application for first release to an HP ALLBASE/4GL run-time environment. The run-time environment administrator cannot create new application definitions.

In general, you should enter `N` in this field if you are unloading an application for subsequent release to a run-time environment. In this case, the existing application definition, which includes the user names and password definition for the application, is not overwritten.

Even if you do enter `N` in this field, you can load the application into a different HP ALLBASE/4GL developer environment that does not contain a definition record for the application. However, you must complete the application definition screen, and enter the list of valid users for the application. Under these conditions, the *Secured* field on all components in the application will be set to Y. To develop the application, the developer must set the *Secured* field to N, and then commit the definition of the component before it can be modified.

Run-Only Copy

Enter `Y` in this field if you do not want to include the application source code with the unloaded application. Enter `N` in this field if you do want to include the application source code.

The unloaded application can be loaded into a different HP ALLBASE/4GL developer environment or an HP ALLBASE/4GL run-time environment regardless of your entry in this field. The presence or absence of the application source code does not make any difference to the execution of the application in an HP ALLBASE/4GL run-time environment. However, the generated components of an application unloaded without the source information cannot be modified even if the application is loaded into an HP ALLBASE/4GL developer environment.

In general, you should not include the application source code in applications released to HP ALLBASE/4GL run-time environments. The source code is not required to run the application and its presence will waste disk space.

Application Generation

When you complete your entries on the application unloading screen and press the `Commit Data` function key, HP ALLBASE/4GL displays a message asking if you want to generate the entire application. If you enter `Y` in response to this message, HP ALLBASE/4GL generates the entire application. If you enter `N` in response to the message, HP ALLBASE/4GL checks whether the application uses an HP ALLBASE/SQL database. If the application does use HP ALLBASE/SQL, HP ALLBASE/4GL asks you if you want to generate the SQL logic blocks in the application.

In general, it's best to generate the entire application before you unload it so you can be sure that all generated components in the unloaded application are up to date.

If the application uses an HP ALLBASE/SQL database, HP ALLBASE/4GL creates the database module files for the application (and versions) you are unloading. These files contain the definitions for the database module for the application (and version) and the definition for the tables used by the application (and version). If you don't generate the application, or at least the

SQL logic blocks in an application before you unload it, the database module files may not exist, or may not be up to date.

If errors occur during generation of an SQL logic block, the database module files are deleted at the end of the unloading procedure so that the application cannot be loaded with incorrect SQL logic blocks. If an SQL table definition contains inconsistencies (such as the name of a record layout name that has since been deleted), an error message will be displayed, and no database module files will be created.

When the generate process finishes, HP ALLBASE/4GL displays a message asking if you want to continue with the unload. If you enter `Y` in response to the message, HP ALLBASE/4GL unloads the application into the external file. If you enter `N`, the unload process terminates.

File-Structure File

If you are unloading a run-only copy of an application, HP ALLBASE/4GL initially displays a message asking you if you want to create the file-structure file for the application. If you enter `Y` in response to this message, HP HP ALLBASE/4GL builds a file *NAME* in the group and account identified by the variable HP4FSPATH and *NAME* is the name of the application you are unloading. The HP4FSPATH variable must be set before you execute the unloading process. This file contains the details of the structure of the data files for the application.

HP ALLBASE/4GL then creates the application definition file for the application.

You must enter `Y` in response to this message if you are unloading an application for release to an HP ALLBASE/4GL run-time environment to update an existing application where the existing KSAM data files must be reformatted. All KSAM data files for the application stored under the group and account identified by the variable HP4DATAPATH on the target system that have structure files present are reformatted if the file-structure file is present during the application loading process.

Enter `N` in response to the message if you do not require the file-structure file.

Unloading Applications for Run-Time Environments

Since HP ALLBASE/4GL run-time environments cannot use the generate program in the HP ALLBASE/4GL developer, all applications unloaded for release to run-time environments must be generated. The source code for generated components is not required to run the application, and can be excluded from the unloaded copy by entering *Y* in the *Unload Run-Only Copy* field.

In addition, run-time environments do not have the ability to create KSAM data files. To install an application on a run-time environment, any KSAM data files required by the application must be installed on the destination system. Once installed, the run-time environment maintains the KSAM data files. The KSAM data files on the run-time environment must be copied onto the system from tape. The files can be empty, or they can contain data that was entered on the development system.

If you unload an application to update an existing application in an HP ALLBASE/4GL run-time environment, you may need to provide a file-structure file to reformat existing KSAM data files. This is only necessary if the structure of the data files has changed.

If the application uses HP ALLBASE/SQL, the database environment should exist on the target system. When the application is loaded onto the system, the load procedure uses the appropriate database module files to create the HP ALLBASE/SQL tables required in the DBEnvironment.

If the database environment does not exist, HP ALLBASE/4GL will not be able to connect to the database. Under these conditions, HP ALLBASE/4GL displays a message to allow entry of a different database environment name.

If the application uses HP TurboIMAGE/iX, the database management system should exist on the target system.

The run-time environment application installation procedure assumes that the release tape for the application contains all of the files mentioned below. The run-time environment system administrator needs to know the names of these files and the names of the groups and accounts containing these files to load the application to the run-time environment.

Note

The run-time environment S-files are **not** the same as the developer environment S-files. You should not include any S-files on release tapes.

To transport an application to an HP ALLBASE/4GL run-time environment, the distribution media must contain the following files:

- **Application Definition File**

  - NAME.!HP4APPNPATH

  Where *NAME* is the name of the application.

- **Database Module Files** (HP ALLBASE/SQL applications)

  - NAME.!HP4DBMPATH

  Where *NAME* is the name of the application. If you are also unloading one or more versions with the application, you must include the database module file for each version as well.

- **HP TurboIMAGE/iX Database Files**

  - NAME.!HP4TIPATH

  Where *NAME* is the name of the database root file.

- **KSAM Data Files** (Initial application installation)

  - fileK.!HP4DATAPATH

  - file.!HP4DATAPATH

  - fileS.!HP4DATAPATH

  Where *file* is the MPE/iX name of the application data file. You must include the key file, data file, and structure file for **each** KSAM data file.

- **File-structure file** (For update of an existing application.)

  - NAME.!HP4FSPATH

  Where *NAME* is the name of the application.

You may need to obtain a list of the names of data files used by the application from the application developer.

Loading Procedure

Before you can load an application to an HP ALLBASE/4GL system, you must copy or move the application definition files to the MPE XL group and account identified by the HP4APPNPATH variable.

To load any application, the application definition file for the application must be present. If KSAM data files must be reformatted during the application loading process, the file-structure file must be present in the group and account identified by the variable HP4FSPATH. If this file is not present, the data files will not be reformatted.

If the application you are loading uses an HP ALLBASE/SQL database or an HP TurboIMAGE/iX database, the database should exist.

In addition, the HP ALLBASE/SQL database must contain the DBE filesets used by the application before you load the application. The database module files for the base application, and for any versions of the application, must be present in the group and account identified by the variable HP4DBMPATH. To load an application to an HP ALLBASE/4GL system, you must display the application loading screen. To display this screen, select the *Load Application* option on the utilities menu. Enter the name of the application you want to load in the *Application* field on this screen.

Renaming Applications

The application loading screen allows you to rename an application while you are loading it. To rename an application, enter the new name for the application in the *Rename Application to* field.

You cannot rename an application if it is a base application for one or more versions.

Performing the Load

When you have completed your entries on the application loading screen, press the `Commit Data` function key. HP ALLBASE/4GL then calls the application loading routine.

The loading procedure checks the S-files of the application, and if any inconsistencies are found, an error message is displayed. Unless your

application was created before the B.01 release of HP ALLBASE/4GL, use the procedures in chapter 12 of the *HP ALLBASE/4GL Developer Reference Manual* to remove the inconsistencies.

HP ALLBASE/SQL Applications

If the application uses HP ALLBASE/SQL, the application loading procedure installs the database module for the application in the database environment. The database environment for the application should exist when the application is being loaded.

During application loading, HP ALLBASE/4GL creates the HP ALLBASE/SQL tables used by the application if the tables don't exist. If the database tables already exist in the database environment for the application, they are not affected by the application loading procedure.

During the loading procedure the database module files for the application and any versions of the application must exist in the group and account identified by the HP4DBMPATH variable.

If the HP ALLBASE/SQL database environment specified on the application definition record does not exist when you load the application, HP ALLBASE/4GL displays a message asking you to enter a database environment name. Enter the name of the database environment for the application, or enter **/** to terminate the loading procedure.

HP TurboIMAGE/iX Applications

After loading an application that accesses one or more HP TurboIMAGE/iX databases, you must complete the following tasks before the application can be used:

- Ensure that the databases exist, or create the appropriate databases.
- Set the HP4TIPATH MPE/iX variable to point to the location of the databases.
- Ensure that the HP TurboIMAGE/iX external file name field set for the database on the database definition screen is correct.
- Ensure that the HP TurboIMAGE/iX user access password set for each database on the parameters for database access screen is correct. This is particularly important if you have created a new database, because the user

access password defined for the application may not be the same as the user access passwords defined in the new database.

Data File Reformat

Caution

If you are loading an application that requires reformatting of data files, make sure that you have a backup copy of any KSAM data files and HP ALLBASE/4GL system files before you start the application loading procedure.

When you are loading an application, HP ALLBASE/4GL checks for the existence of a file-structure file in the group and account identified by the variable HP4FSPATH. If a file-structure file exists, HP ALLBASE/4GL displays a warning message telling you that data files will be reformatted and displays a query message asking you if you want to go ahead with loading the application. If you proceed with loading the application, all KSAM data files for the application under the MPE/iX group and account identified by the variable HP4DATAPATH that have a structure file present will be reformatted.

If you enter `N` in response to the query message, the load process is aborted. If you enter `Y`, HP ALLBASE/4GL loads the application definition into the S-files. When the application definition has been loaded, HP ALLBASE/4GL calls the data file reformat routine to reformat application data files. HP ALLBASE/4GL compares the file structure for each data file as it is stored in the file-structure file, and in the structure file for each data file. If the file structure has changed, HP ALLBASE/4GL reformats the data file. If the structure of a data file recorded in the structure file, and the structure shown in the file-structure file are identical, the data file is not reformatted.

If you don't want a file to be reformatted even if the structure has changed, you must take one of the following actions:

- Rename the file.

  To do this you should rename all MPE/iX files for the data file. These are the files *file*, *fileK*, and *fileS* where *file* is the name of the file.

- Delete or rename the structure file for the data file.

- Move the file to a group and account other than the group specified by the variable HP4DATAPATH.

If you are loading a version with the application, the data files are reformatted according to the definitions for the version, not the base application.

HP ALLBASE/4GL displays a series of messages showing the files that are being reformatted and indicating whether any error conditions occur.

Caution

Under some circumstances, the file reformat process may fail. If a file cannot be reformatted successfully, HP ALLBASE/4GL displays a warning message and prints a warning on the data file report. Don't attempt to use the application if a data file has not been reformatted successfully. An incorrectly formatted data file may corrupt the existing data in the file.

At the end of the file reformat process, HP ALLBASE/4GL deletes the file containing the file structure information.

File Reformat Report

At the end of the reformat procedure, HP ALLBASE/4GL writes a report containing the text of all the file reformat messages. By default, the report is directed to device disc file HP4RFLOG. The formal file designator for the report is HP4RFLOG.

If any files have not been reformatted correctly, the report contains a warning message.

Menu Item Security

If you use the application loading procedure to update an existing application, any menu item security definitions for the application are overwritten.

In addition, any menu item security definitions for a new application will be meaningless after the application has been loaded into the HP ALLBASE/4GL system.

You must redefine the menu item security for the application after you have completed the loading procedure.

FINAL TRIM SIZE : 7.0 in x 8.5 in

7

Reference Section

This chapter describes the various screens in the administrator application. The screens are presented in alphabetical order.

The contents of the screens are described under the following subheadings:

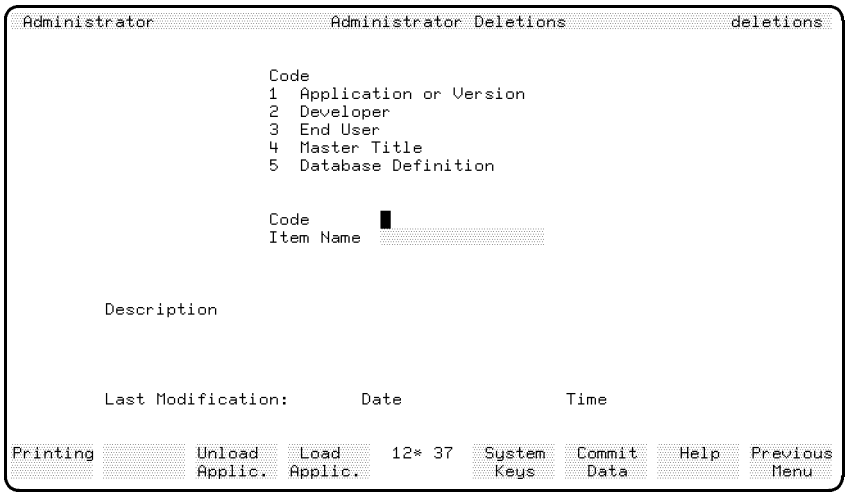
- Screen Name.
- Screen Image.
- Field Descriptions.
- Function Keys.
- Additional Information.

Only the function keys specific to a screen are described. Standard function keys, such as the `Help` function key, are not described.

Administrator Deletions Screen

This screen is accessed through the *Utilities* option on the main menu. The administrator deletions screen allows you to delete selected parts of the system, or entire applications or versions.

Screen Image



Field Descriptions

Code. Enter the code corresponding to the type of item you want to delete.

Item Name. Enter the name of the item you want to delete.

Description. Display-only field. When you enter the name of the item to be deleted, HP ALLBASE/4GL displays the description of the item for confirmation.

Function Keys

f1 `Printing` Cancels the current screen and displays the administrator documentation menu.

f3 `Unload Applic.` Cancels the current screen and displays the application unloading screen.

f4 `Load Applic.` Cancels the current screen and displays the application loading screen.

f6 `Commit Data` Deletes the selected item.

Additional Information

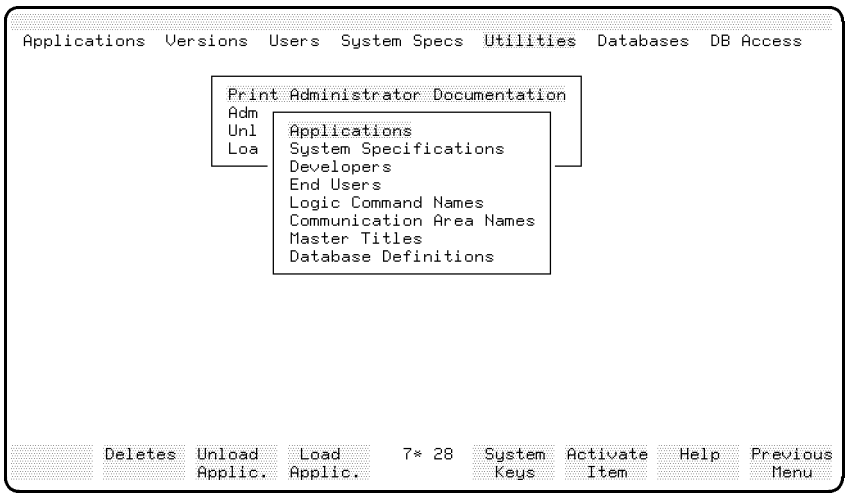
Before you delete an application, make sure there are no versions of the application on the system. If you delete an application, the system deletes all the logic associated with the application, even if that logic is used in related versions of the application.

You can use the administrator documentation menu to print a report of the applications on the system to determine if an application is a base for any versions.

Administrator Documentation Menu

This menu allows you to print reports showing the current status of your system. You can access this screen from the *Utilities* option on the administrator main menu.

Screen Image



Menu Selections

Select the item you want from the list and press the `Activate Item` function key. By default, HP ALLBASE/4GL writes the report to device class LP. The formal file designator is HP4REP.

Function Keys

f2 `Deletes` Cancels the current screen and displays the administrator deletions screen.

f3 `Unload Applic.` Cancels the current screen and displays the application unloading screen.

f4 `Load Applic.` Cancels the current screen and displays the application loading screen.

f6 `Activate Item` Prints the selected report.

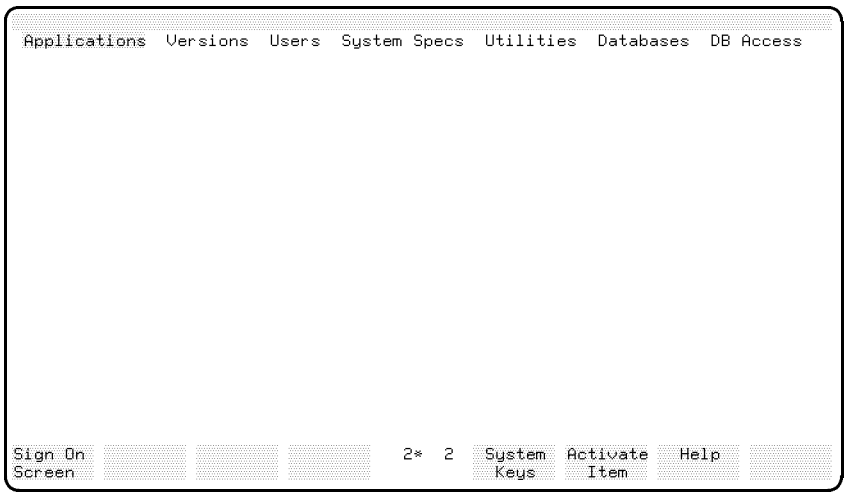
Report Details

An administrator documentation report consists of a listing of all the details you have defined for the selected item. The details are arranged under headings suited to the item type. The report is written to formal file designator HP4REP. By default, the report is written to device class LP.

Administrator Main Menu

HP ALLBASE/4GL displays this menu automatically when you sign on to the administrator application. This menu allows you to access the administrator facilities.

Screen Image



Menu Selections

Applications. This selection takes you to the application definition screen, allowing you define an application name, the users and user groups for the application, and the security for the application.

Versions. This selection takes you to the version definition screen, allowing you to define a version of an existing application.

Users. This selection takes you to the user validation menu. Selections on this menu allow you to define developers and end users for applications. This menu also allows you to set the security attributes for items on application menus.

System Specs. This selection displays the system-wide specifications menu. Selections on this menu allow you to define various system-wide defaults,

terminal display attributes, master titles, and synonyms for command names and communication area names.

Utilities. This selection displays the administrator utilities menu. Selections on this menu execute utility programs that allow you to print administrator documentation, load or unload applications, and delete developer names, user names, or whole applications.

Databases. This selection displays the database definition screen. This screen allows you to define HP TurboIMAGE/iX databases.

DB Access. This selection displays the parameters for database access screen. On this screen you may specify the HP TurboIMAGE/iX databases that may be accessed by an application, and any database access parameters required for the application to access a database.

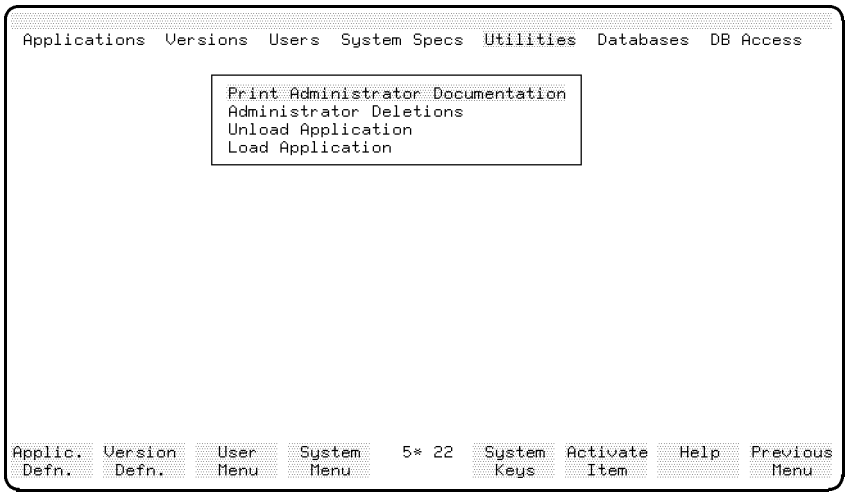
Function Keys

f1 `Sign On Screen` Returns you to the HP ALLBASE/4GL sign-on screen.

Administrator Utilities Menu

The administrator utilities menu allows you to access the screens used to print administrator documentation, delete applications or users from the system, and load or unload HP ALLBASE/4GL applications. This menu appears on the administrator main menu.

Screen Image



Menu Selections

Print Administrator Documentation. This selection displays the administrator documentation menu, allowing you to print documentation about selected HP ALLBASE/4GL items.

Administrator Deletions. This selection displays the administrator deletions screen, allowing you to delete selected parts of the system or entire applications.

Unload Application. This selection displays the application unloading screen, allowing you to write a complete application to a single external file so it can be transported to a different HP ALLBASE/4GL system.

Load Application. This selection displays the application loading screen, allowing you to load an application to the HP ALLBASE/4GL system.

Function Keys

f1 `Applic. Defn.` Cancels the current screen and displays the application definition screen.

f2 `Version Defn.` Cancels the current screen and displays the version definition screen.

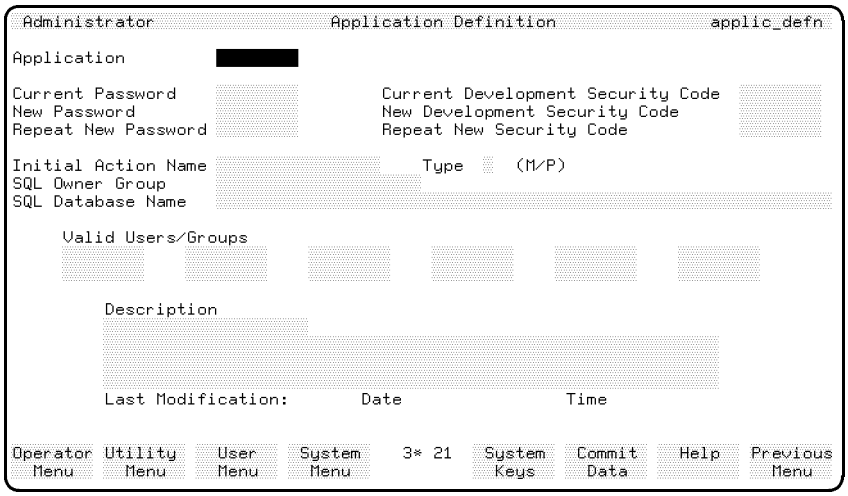
f3 `User Menu` Cancels the current screen and displays the user validation menu.

f4 `System Menu` Cancels the current screen and displays the system-wide specifications menu.

Application Definition Screen

This screen allows you to define the name of an application, its password, development security code, and its valid developers, users, and user groups. This screen can be accessed from the *Applications* option on the main menu.

Screen Image



Field Descriptions

Application. Enter the name used to identify the application. Application names must start with an alphabetic character, and can have up to eight characters. The application name can use the characters *A* to *Z*, and *0* to *9*. The application name must be unique.

You cannot use the names *administ* or *developr* as application names.

The application name *HPlogo* is reserved for storing HP ALLBASE/4GL sign-on screen logo windows. The application names *HPLIBnnn* and *ULIBnnn* (where nnn is the three digit language identifier) are reserved for storing module builder templates. The name *hpqm* is also reserved. If HP ALLBASE/QUERY is installed on the system, this application allows direct

access to HP ALLBASE/QUERY. You may alter the definitions of these reserved applications, but do not use these names for new applications.

HP ALLBASE/4GL uses the application name as the name for files that are created during the application unloading process and the application generation process. The application name must be a legal MPE/iX file name.

Note

HP ALLBASE/4GL is case sensitive with respect to application names even though MPE/iX file names are not case sensitive. This means that you must be careful about your choice of application names. For example, HP ALLBASE/4GL regards the two applications *Accounts* and *ACCOUNTS* as distinct. However, the files generated during the application unloading process and the application generation process all have the name ACCOUNTS.

Current Password. This field is not active unless you have already defined a password for the application.

If you have already defined a password for the application, this field becomes an active input field. You must enter the existing password into this field before you can change the password. HP ALLBASE/4GL does not echo the password to the screen as you type it in.

New Password. Optional. If you are defining a password for the application or changing the existing password, this field becomes an active input field. Enter the new password into this field. Passwords must start with an alphabetic character and can have up to eight characters. Passwords can contain alphabetic characters, 0 to 9, and _ (underscore). HP ALLBASE/4GL is case sensitive with respect to passwords.

HP ALLBASE/4GL does not echo the password on the screen as you type it in.

Repeat New Password. Reenter the new password in this field. You must reenter exactly the same password, or HP ALLBASE/4GL displays an error message and returns the cursor to the *New Password* field.

Note

The password defined in the above group of fields only applies to end users for the application. If you define a password for an application, end users must enter the password on the HP ALLBASE/4GL sign-on screen to access the application. Developer users can access the application without entering the application password.

Current Development Security Code. This field is not active unless you have already defined a development security code for the application. To change an existing development security code for an application, enter the current code in this field.

New Development Security Code. If you are defining a development security code for a new application or changing the development security code for an existing application, enter the new code in this field. HP ALLBASE/4GL does not echo the code as you type it in.

A development security code must start with an alphabetic character and can contain up to eight characters. Development security codes can use alphabetic characters, 0 to 9, and _ (underscore). HP ALLBASE/4GL is case sensitive with respect to development security codes.

Repeat New Security Code. Reenter the new development security code in this field. If you don't enter exactly the same code as you entered in the field above, HP ALLBASE/4GL displays an error message, and returns the cursor to the *New Development Security Code* field.

Initial Action Name. Enter the name of the first action executed within the application.

Type. Enter `M` if the first action in the application is a menu. Enter `P` if the first action is a process.

SQL Owner Group. Enter the name of the SQL owner group for the application. HP ALLBASE/4GL converts this name to uppercase characters as you enter it.

HP ALLBASE/4GL automatically transfers ownership of all tables and modules created from within HP ALLBASE/4GL to this owner group.

Don't attempt to change the SQL owner group name for an application after development has commenced. If you do, you may invalidate database modules containing stored sections for the application.

SQL Database Name. Enter the external name (and optionally the group and account name) for the SQL DBECon file for the data base environment for the application.

You can specify a fully qualified file name in the form *FILE.GROUP.ACCOUNT*, or simply specify a DBECon file name.
If you don't specify a fully qualified DBECon file name, HP ALLBASE/4GL appends the current values of the HP4SQLPATH variable to the file name you specify.

The database environment must exist, and must contain at least one DBE fileset and at least one DBE file before the application can be developed.

Valid Users/Groups. Enter the names of the developers, end users, or user groups to be allowed to access the application. For an application under development, you must include the developer's name in this list.

These names must be defined on the relevant user validation screens before you can enter them on this screen. Alternatively, enter `*ALL` to allow all developers and end users to access the application.

Description. These are documentation fields. Enter a description of the application. HP ALLBASE/4GL automatically records the time and date of the last modification.

Function Keys

f1 `Version Defn` Cancels the current screen and displays the version definition screen.

f2 `Utility Menu` Cancels the current screen and displays the administrator utilities menu.

f3 `User Menu` Cancels the current screen and displays the user validation menu.

f4 `System Menu` Cancels the current screen and displays the system-wide specifications menu.

Additional Information

If you assign a development security code to an application, the original developer can ensure that secured items within the application can only be modified by a developer who has signed on to the application under the correct development security code.

When all the required fields on the appropriate developer screen have been completed, the developer of the application can secure items by setting the secured field for the items to Y. Refer to the *HP ALLBASE/4GL Developer Reference Manual* for details of the items that can be secured.

A developer can still sign on to the application without entering the development security code. Under these circumstances, the developer can examine the secured components of the application, but cannot change them.

HP ALLBASE/SQL Databases

Database Security

All user access to HP ALLBASE/SQL database environments is controlled by the security provisions defined in HP ALLBASE/SQL.

All application developers require RESOURCE and CONNECT authority for the database environment. Developer users must be members of the SQL owner group shown on this screen.

Application end users must have CONNECT authority for the database environment and must also have RUN authority for the module used by the application. Application end users should not be members of the SQL owner group shown on this screen.

Multi-User Databases

During application development, HP ALLBASE/SQL databases should be configured as multi-user databases.

HP ALLBASE/4GL connects to the database when a developer creates or deletes HP ALLBASE/SQL tables. HP ALLBASE/4GL also connects to the database when a developer generates an SQL logic block or generates an entire application.

Once HP ALLBASE/4GL connects to a database from the developer environment, the connection is maintained for the remainder of the session. If a developer attempts to run an application using the *Application Testing* option in the developer environment, HP ALLBASE/4GL attempts to create a second connection to the database. This connection cannot succeed if the database for the application is a single user database.

HP TurboIMAGE/iX Databases

If an application accesses any HP TurboIMAGE/iX databases, you must define the database on the database definition screen, and grant the application access to the database on the parameters for database access screen. Both of these tasks must be done before the application can use an HP TurboIMAGE/iX database.

Application Loading Screen

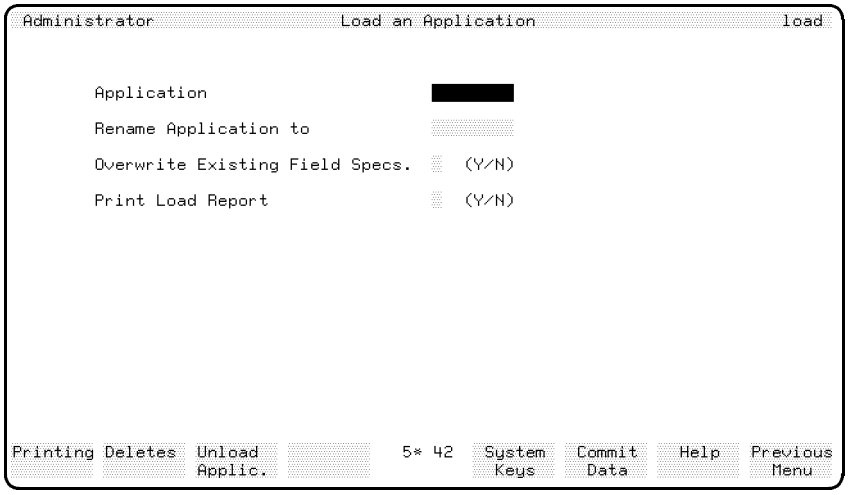
This screen allows you to load an application and any versions stored with it into the HP ALLBASE/4GL S-files. You can access this screen from the *Utilities* option on the main menu.

Caution

Using this screen to load an application into the HP ALLBASE/4GL system may cause KSAM data files for the application to be reformatted.

Refer to Additional Information for details about the precautions you should take before you load an application.

Screen Image



Field Descriptions

Application. Enter the name of the application that you want to load.

The names *administ*, *developr*, *hpqm*, *HPlogo*, *HPLIBnnn* and *ULIBnnn* (where nnn is a three-digit language identifier) are reserved application names. You may load these applications but you should not rename them.

Rename Application to. Optional. If you want to rename the application, enter the new application name.

Note

You cannot rename an application if it is a base application for one or more versions.

Overwrite Existing Field Specs. If you enter `Y` in this field, any field specifications in the load file will overwrite the field specifications for the same fields (if they exist) in the application dictionary.

If you enter `N` in this field, the existing field specifications in the application dictionary are retained. Any changes to existing field specifications in the load file are ignored, but the specifications for new fields in the load file are written into the application dictionary.

You must enter `Y` in this field if you are loading a run-only application and the application data files require reformatting.

Print Load Report. Enter `Y` to print a load report, or enter `N` to suppress printing of the report. HP ALLBASE/4GL writes the report to the formal file designator HP4REP. By default, the report is printed on device class LP. The report lists the names and details of any new or altered dictionary field specifications loaded to the system S-files.

Function Keys

(f1) `Printing` Cancels the current screen and displays the administrator documentation screen.

(f2) `Deletes` Cancels the current screen and displays the administrator deletions screen.

(f3) `Unload Applic.` Cancels the current screen and displays the application unloading screen.

(f6) `Commit Data` Starts the application loading process.

Additional Information

The loading procedure runs a check on the S-files of the application, and if any inconsistencies are found, an error message is displayed. Unless your application was created before the B.01 release of HP ALLBASE/4GL, use the procedures in the Utilities chapter of the *HP ALLBASE/4GL Developer Reference Manual* to remove the inconsistencies.

The application loading utility loads an application from the application definition file into the S-files. The application definition file must be in the group and account identified by the HP4APPNPATH variable.

You can use this screen to transfer an application from a different HP ALLBASE/4GL installation to your system, or restore an application from tape. To do this, you must use the appropriate MPE/iX commands to restore the application definition file to the system.

Application Data Files

The application loading utility does not create any KSAM data files for the application being loaded. If the application requires KSAM data files, you can use the MPE/iX utilities to restore the of files from tape.

Alternatively, application developers can use the appropriate developer screens to create data files for the application.

Application Data File Reformatting

Caution

The application loading process may reformat the KSAM data files for HP ALLBASE/4GL applications.

If you use the application loading process to reformat application data files, make sure that you have backup copies of all your application data files before you start the loading process.

HP ALLBASE/4GL provides a means of automatically reformatting KSAM data files for applications that have been unloaded without the source information. This mechanism is primarily intended for reformatting data files in the HP ALLBASE/4GL run-time environment, but it can be used to reformat data files in the HP ALLBASE/4GL developer environment.

The data file reformat system uses the structure file associated with each application data file, and the file-structure file created during the unloading process for a run-only application. After the application is loaded into the S-files, HP ALLBASE/4GL compares the file structure for the application data files as stored in the file-structure file and the file structure shown in the structure file for the KSAM files. The file-structure file must be in the group identified by the variable HP4FSPATH, and the structure files for the application data files must be in the account and group identified by the variable HP4DATAPATH.

If the two structures are not the same, the KSAM data file is reformatted to match the new structure shown in the file-structure file. If the two structures are the same, the KSAM data file is not changed.

At the end of the reformatting process, HP ALLBASE/4GL deletes the file-structure file.

Note

The automatic data file reformatting system can only reformat data files in the account and group identified by the variable HP4DATAPATH. Data files in other accounts and groups are not reformatted.

At the start of the application loading procedure, HP ALLBASE/4GL checks for the existence of a file-structure file for the application in the group and account identified by the HP4FSPATH variable. If this file exists, HP ALLBASE/4GL displays a warning message. Enter `Y` in response to this message if you want to proceed with loading the application, or enter `N` if you want to abort the load.

Caution

If you enter `Y` in response to this message, all KSAM data files for the application that have a structure file present will be reformatted during the loading process.

If you don't want to reformat any data files for the application, you must purge or rename the structure file before you start loading the application.

If you want to reformat some data files, but not others, you must purge, move, or rename the structure file for the data files you do not want to reformat.

Refer to Chapter 6 for more information about reformatting data files.

HP ALLBASE/SQL Applications

If the application uses HP ALLBASE/SQL, the application loading procedure installs the database module for the application in the database environment. The database environment for the application should exist when the application is being loaded.

During application loading, HP ALLBASE/4GL creates the HP ALLBASE/SQL tables used by the application if the tables don't exist. If the database tables already exist in the database environment for the application, they are not affected by the application loading procedure.

During the loading procedure the database module files for the application and any versions of the application must exist in the group and account identified by the HP4DBMPATH variable.

If the HP ALLBASE/SQL database environment specified on the application definition record does not exist when you load the application, HP ALLBASE/4GL displays a message asking you to enter a database environment name. Enter the name of the database environment for the application, or enter **/** to terminate the loading procedure.

HP TurboIMAGE/iX Applications

After loading an application that accesses one or more HP TurboIMAGE/iX databases, you must complete the following tasks before the application can be used:

- Ensure that the databases exist, or create the appropriate databases.
- Set the HP4IMAGEPATH MPE/iX variable to point to the location of the databases.
- Ensure that the HP TurboIMAGE/iX user access password set for each database on the parameters for database access screen is correct. This is

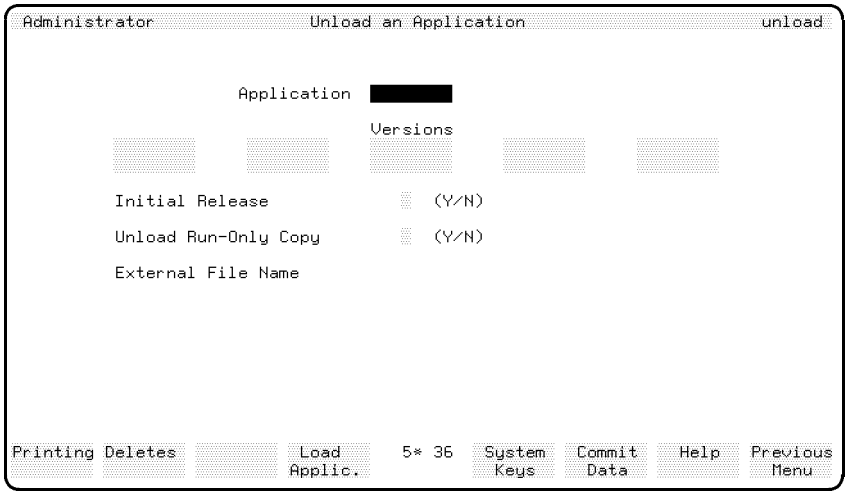
particularly important if you have created a new database, because you may not have used the same user access passwords in your database definition.

Application Unloading Screen

This screen, which you can access from the *Utilities* option on the main menu, allows you to write a complete application, and up to 10 versions of the application, to a separate external file. You can then write this file to disk, tape or cartridge for transport to another HP ALLBASE/4GL system, or create a backup copy of the application.

The application unloading process does not delete the application or change it in any way. Use the administrator deletions screen to delete an application.

Screen Image



Field Descriptions

Application. Enter the name of the application that you want to unload.

Versions. Enter the names of the versions that you want to unload with the application. You cannot unload versions without unloading the base application.

Caution

Under some circumstances, KSAM data files used by versions on the target system may be corrupted during subsequent application loading if you attempt to unload two or more versions with an application.

Don't attempt to unload more than one version with an application if the versions use different formats for their data files.

Initial Release. If you enter `Y` in this field, the system writes the application and version definition records from the application and version definitions screens to the external file.

If you enter `N` in this field, the definition records for the application (and versions) are not written to the external file.

Note

You must enter `Y` in this field if you are unloading an application for first release to a run-only HP ALLBASE/4GL site. The system administrator for the run-only site cannot create new application or version definitions. The run-only site system administrator can only add or delete users for the application or version.

Unload Run-Only Copy. Enter `Y` in this field to unload a run-only copy of the application. Enter `N` in this field if you want to include the developer's source code with the unloaded application.

If you unload an application without the application source (that is, a run-only copy of the application), the generated components of the unloaded application cannot be modified, copied, or deleted.

If you enter `Y` in this field, HP ALLBASE/4GL displays a message asking if you want to create a data file structure file. If you enter `Y` in response to the message, HP ALLBASE/4GL creates a file *nameS* in the group and account identified by the HP4FSPATH variable, where *name* is the application or version name. This file contains the definition of the data files used by the application or version you are unloading. The file contains the definitions for KSAM data files used by the base application if you are unloading an

application by itself. The file contains the definition for KSAM data files used by the version if you are unloading a version with the base application.

Don't attempt to unload more than one version with the application if the KSAM data files for the version require reformatting.

During the application loading process on the destination system, HP ALLBASE/4GL uses the *nameS* file in conjunction with the existing file-structure files for the application or version (in the group and account identified by the HP4FSPATH variable) to reformat the data files. Refer to Additional Information for more information about data file reformatting.

External File Name. Display-only field. The display in this field becomes the name of the base application you are unloading. HP ALLBASE/4GL creates the file in the the group and account identified by the HP4APPNPATH variable.

Function Keys

(f1) `Printing` Cancels the current screen and displays the administrator documentation screen.

(f2) `Deletes` Cancels the current screen and displays the administrator deletions screen.

(f4) `Load Applic.` Cancels the current screen and displays the application loading screen.

(f6) `Commit Data` Starts the application unloading process.

Additional Information

The application unloading process writes the definition of an entire application and up to ten versions to an application definition file in the group and account identified by the current value of the HP4APPNPATH variable. The name of the application definition file is the name of the base application you are unloading.

After you have unloaded the application, you can use the application definition file for the following purposes:

- To transport the application to a different HP ALLBASE/4GL installation on the same system.

- To transport the application to a different HP ALLBASE/4GL system on a different system.
- To create a backup copy of the application on tape.

You can move an unloaded application to a different HP ALLBASE/4GL installation on the same system. (That is, an HP ALLBASE/4GL installation contained in a set of S-files other than the S-files used to develop the application.) To do this, use the appropriate operating system commands to move or copy the application definition file to the group and account identified by the HP4APPNPATH variable for the destination system.

To transport an application to an HP ALLBASE/4GL system on a different system, or to create a backup copy of the application, you will need to copy the application definition file to tape.

Application Generation

When you press the `Commit Data` function key, HP ALLBASE/4GL displays a message asking if you want to generate the entire application. Enter `Y` to generate the entire application and any versions of the application before calling the unloading routine.

If you enter `N` in response to the message, HP ALLBASE/4GL checks if the application accesses an HP ALLBASE/SQL database. If it does, HP ALLBASE/4GL issues a further message asking if you want to generate all SQL logic blocks in the application. Enter `Y` to generate all SQL blocks in the application and any versions of the application before calling the unloading routine.

HP ALLBASE/SQL Applications

Any application that uses an HP ALLBASE/SQL database consists of a series of records in the HP ALLBASE/4GL S-files, and a number of preprocessed sections stored as a module in the database environment. HP ALLBASE/4GL creates one database module for a base application, and one module for **each** version of the application.

HP ALLBASE/4GL also stores a copy of the database environment modules for each application and version in the group and account identified by the

HP4DBMPATH variable. The database module files have the same name as the application or version.

To transport an application that uses HP ALLBASE/SQL to another site, you must also copy the database module files for the application and **each** version of the application to tape.

Generating the application before it's unloaded ensures that the database module files and the generated records for the application are up-to-date.

HP TurboIMAGE/iX Applications

No extra procedures are necessary to unload applications that access one or more HP TurboIMAGE/iX databases.

HP TurboIMAGE/iX Data Set Reformatting

HP ALLBASE/4GL has no facilities for reformatting HP TurboIMAGE/iX data sets.

If you need to reformat an HP TurboIMAGE/iX data set to reflect changes to field types or the structure of record layouts, you can use HP TurboIMAGE DBchange/XL, if it exists on your system. This tool allows you to alter the security and structure of an HP TurboIMAGE/iX database with ease.

Limitations

The application unloading process does not include the definitions of any logic command synonyms or communication area synonyms in the unloaded application.

Menu item security definitions included with unloaded applications will not apply when the application is loaded into another HP ALLBASE/4GL system. If menu item security is required when the application is loaded to a different HP ALLBASE/4GL system, the menu security must be redefined when the application is loaded onto the destination system.

Run-Time Environment Data File Reformatting

HP ALLBASE/4GL provides a mechanism for automatically reformatting KSAM data files for run-only applications. A data file must be reformatted

if any field specifications have changes, or the structure of the default record layout for the file has changed.

The automatic data file reformatting mechanism uses the file-structure file (in the group and account identified by the variable HP4FSPATH) that is created during the application unloading process, and the structure files (*nameS* files) associated with each data file. During the application loading process, HP ALLBASE/4GL compares the information in the file-structure file with the structure in the *nameS* file. If the data file structure has changed, HP ALLBASE/4GL reformats the file to reflect the new structure.

When you unload a run-only copy of an application, HP ALLBASE/4GL displays a message asking if you want to create the file-structure file. Enter `Y` in response to the message if you want to create the file-structure file so data files on the destination system are reformatted. You only need to enter `Y` in response to this message if you are unloading an application to update an existing application on the destination system, and the KSAM data file structures have changed.

HP ALLBASE/4GL then creates the application definition file for the application.

If you don't need to reformat data files on the destination system, enter `N` in response to the message.

Refer to Chapter 6 for more information about reformatting data files.

Unloading Run-Time Environment Applications

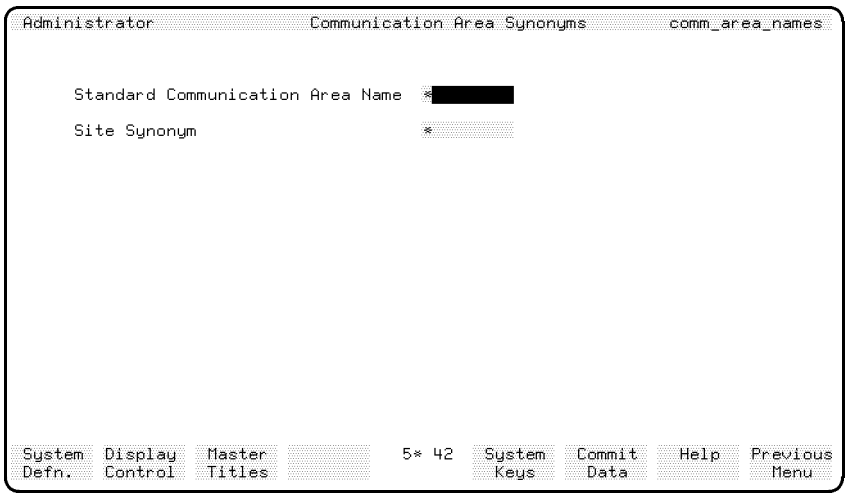
Since run-only HP ALLBASE/4GL systems cannot use the *generate* program in the HP ALLBASE/4GL developer, all applications unloaded for release to run-only sites must be generated. The source code for generated components is not required at the run-only site, and can be excluded from the unloaded copy by entering `Y` in the *Unload Run-Only Copy* field.

Refer to Chapter 6 for more information about unloading applications for run-time environments.

Communication Area Synonyms Screen

This screen allows you to define a synonym for each communication area field name. You can access this screen from the *System Specs* option on the main menu.

Screen Image



Field Descriptions

Standard Communication Area Name. Enter the standard name for the communication area field you want to define the synonym for. Appendix B contains a list of the standard communication area names.

Site Synonym. Enter the synonym for the field. The synonym can have up to eight uppercase alphabetic characters. HP ALLBASE/4GL automatically converts your keyboard entry to uppercase.

Function Keys

f1 `System Defn.` Cancels the current screen and displays the system definition screen.

f2 `Display Control` Cancels the current screen and displays the terminal display control screen.

f3 `Master Titles` Cancels the current screen and displays the master titles screen.

Additional Information

Communication area synonyms are not transferred with the application if you transport an application to another site with the unload/load facilities. You must define synonyms at each site.

All applications at each site must use the same synonyms. An application using different synonyms may fail. Similarly, removing a synonym from your system will cause applications using that synonym to fail. Existing generated applications are not affected by changes to communication area synonyms.

Synonyms for communication area fields are only valid in generated logic. Developers cannot use synonyms to define system items on reports or screens.

Subscripted Communication Area Fields

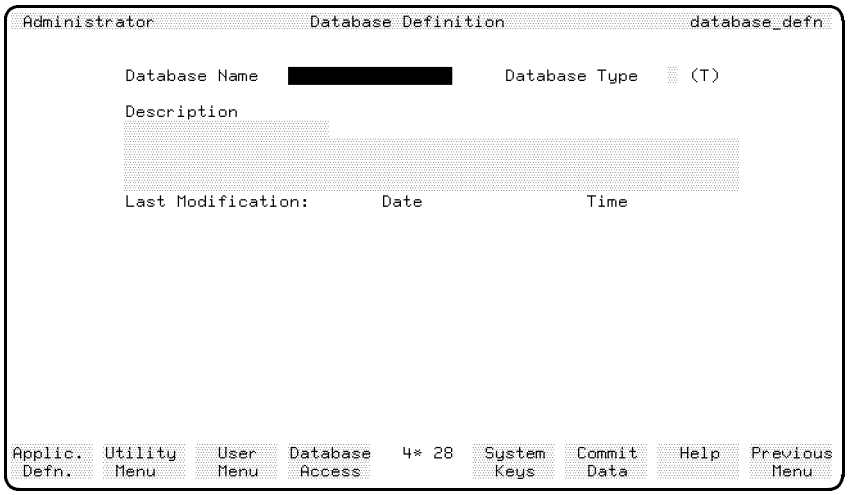
You cannot define individual synonyms for the *TOTALS(n), COUNT(n) and *CROSS(n) communication area fields used by the report generator, although you can define synonyms for these communication area names.

To define synonyms for these communication area names, enter `TOTALS(`, `CROSS(`, or `COUNT(` in the *Standard Communication Area Name* field. Enter the synonym as `NAME(` where *NAME* is your chosen synonym. Application developers can then reference these fields as **NAME(n)*.

Database Definition Screen

This screen allows you to define an HP TurboIMAGE/iX database and allocate it an internal HP ALLBASE/4GL name. This screen is accessed from the *Databases* option on the main menu.

Screen Image

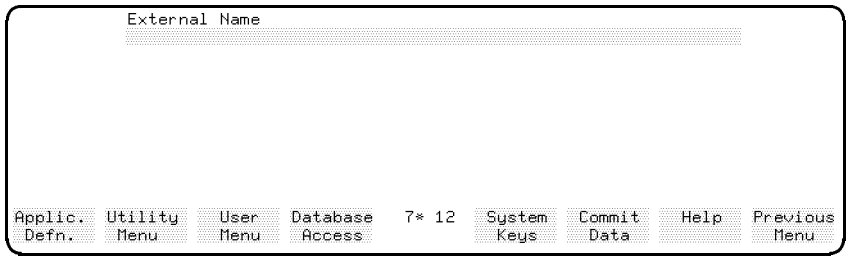


Field Descriptions

Database Name. Enter an HP ALLBASE/4GL name for the database that you wish to define (up to 16 characters).

Database Type. This field defaults to the entry `T`, which specifies that you are defining an HP TurboIMAGE/iX database. Currently, this is the only valid database type for this field. When you commit this field, HP ALLBASE/4GL displays a window with a field to allow you to specify the external name of the database.

Description. Documentation fields. Enter a description of the database for documentation purposes. HP ALLBASE/4GL automatically updates the date and time fields to show the date and time of the last modification.



This window is displayed after the database type field is entered.

External Name. Enter the external name of the database. This is the name of the root file for the HP TurboIMAGE/iX database.

You can specify a fully qualified file name in the form *FILE.GROUP.ACCOUNT*, or simply specify a root file name. If you don't specify a fully qualified root file name, HP ALLBASE/4GL appends the current value of the HP4TIPATH variable to the file name you specify at run-time.

Function Keys

(f1) `Applic.Defn` Cancels the current screen and displays the application definition screen.

(f2) `Utility Menu` Cancels the current screen and displays the administrator utilities menu.

(f2) `User Menu` Cancels the current screen and displays the user validation menu.

(f2) `Database Access` Cancels the current screen and displays the parameters for database access screen.

Additional Information

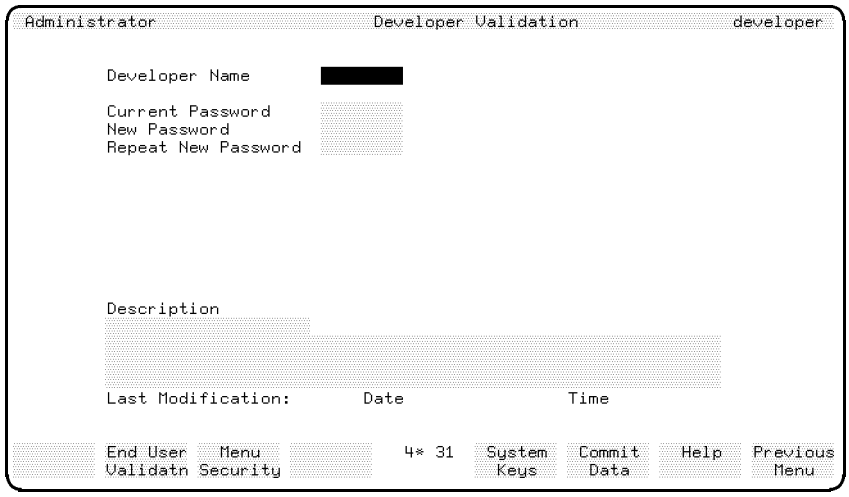
To delete a database definition, you may use the utilities administrator deletions screen.

To allow an application to access a defined database, you must grant access to the database using the parameters for database access screen. You cannot use a database in an application until you have granted the application this access.

Developer Validation Screen

This screen allows you to define names and passwords for application developers. It also allows you to define or alter the system administrator password. The Developer Validation Screen is accessed from the *Users* option on the main menu.

Screen Image



Field Descriptions

Developer Name. Enter the name used to identify the application developer. A developer name must start with an alphabetic character, and can have up to eight characters. The name can use alphabetic characters, 0 to 9, and _ (underscore). The name must be unique within the developer, end user, and user group set. You cannot enter the name *developr* in this field.

HP ALLBASE/4GL is case sensitive with respect to user names.

Note

The name *administ* is reserved for the system administrator. In the development administration environment for HP ALLBASE/4GL, you can use this screen to set the password for the user *administ*.

Current Password. This field is only active if you have already defined a password for the developer.

If you want to change an existing password for a developer, enter the current password in this field.

New Password. Optional. Enter the password you wish to allocate to the developer.

Passwords can have up to eight characters and must start with an alphabetic character. Passwords can use alphabetic characters, 0 to 9, and _ (underscore). HP ALLBASE/4GL is case sensitive with respect to passwords.

HP ALLBASE/4GL does not echo that password to the screen as you type it in.

Repeat New Password. Reenter the new password for the developer. If you don't reenter exactly the same password, HP ALLBASE/4GL generates an error message and returns the cursor to the *New Password* field.

Description. These are documentation fields. Enter a description of the developer. HP ALLBASE/4GL automatically records the time and date of the last modification.

Function Keys

f2 `End User Validatn` Cancels the current screen and displays the end user validation screen.

f3 `Menu Security` Cancels the current screen and displays the menu item security screen.

Additional Information

HP ALLBASE/4GL stores developer names, end user names, and user group names in a common internal table. This table can accommodate up to 254 names. All entries in the table must be unique.

Administrator Passwords

HP ALLBASE/4GL considers the system administrator to be a special case developer user. Consequently, you can use this screen to set your password, or change your password.

To set a password for the sign-on name *administ*, enter the name `administ` in the *Developer Name* field. You can now define a password by entering it in the *New Password* and *Repeat New Password* fields in the same way as you would enter a password for any other developer user.

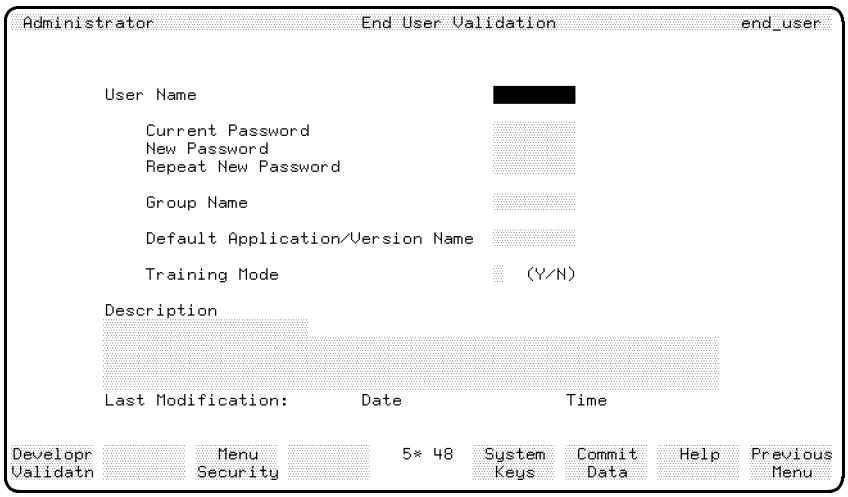
Caution

If you define a password for the HP ALLBASE/4GL system administrator, make sure that you keep a copy of the password in a safe place. If you forget the password, you will not be able to access the HP ALLBASE/4GL system.

End User Validation Screen

This screen allows you to define the name, group name, and password for each application end user. The screen is accessed from the *Users* option on the main menu.

Screen Image



Field Descriptions

User Name. Enter the name used to identify the end user. The user name must start with an alphabetic character and can have up to eight characters. End user names can use alphabetic characters, 0 to 9, and _ (underscore). End user names must be unique within the developer, end user, and user group set.

Note

The names *developr* and *administ* are reserved names. You cannot use them for application end users.

You may alter the definition of the reserved end user name *hpqm* on this screen. If HP ALLBASE/QUERY is installed on the system, this user has direct access to HP ALLBASE/QUERY.

Current Password. This field is not active unless you have already defined a password for the end user.

If you want to change an existing password for an end user, you must enter the current password in this field.

New Password. Optional. Enter the password you wish to allocate to the end user. Passwords can have up to eight characters, and must start with an alphabetic character. Passwords can use alphabetic characters, 0 to 9, and _ (underscore). HP ALLBASE/4GL is case sensitive with respect to passwords.

HP ALLBASE/4GL does not echo the password to the screen as you type it in.

Repeat New Password. Reenter the new password in this field. If you don't reenter exactly the same password, HP ALLBASE/4GL displays an error message and returns the cursor to the *New Password* field.

Group Name. Optional. If you want to assign the user to a user group, enter the group name in this field. User group names must start with an alphabetic character and can have up to eight characters. User group names can use alphabetic characters, 0 to 9, and _ (underscore). HP ALLBASE/4GL is case sensitive with respect to user group names.

User group names must be unique within the developer, end user, and user group name set.

You don't need to define a user group. HP ALLBASE/4GL automatically builds each group from the names you enter.

Default Application/Version Name. If you want a particular application or version name to be displayed on the sign-on screen by default each time the user signs on, enter the name of the application or version in this field. The user can type over the default name on the HP ALLBASE/4GL sign-on screen to run a different application or version.

The application does not need to exist when you enter its name in this field.

Training Mode. Enter `Y` if you want to limit the user to training mode access; otherwise enter `N`. In training mode, the user can read records from the application's data files, but cannot modify the data files. The application's help facilities are available to the user.

Description. These are documentation fields. Enter a description of the user. HP ALLBASE/4GL automatically records the time and date of the last modification.

Function Keys

f1 `Developr Validatn` Cancels the current screen and displays the developer validation screen.

f3 `Menu Security` Cancels the current screen and displays the menu item security screen.

Additional Information

HP ALLBASE/4GL stores developer names, end user names, and user group names in a common internal table. This table can accommodate up to 254 names. All entries in the table must be unique.

User Groups

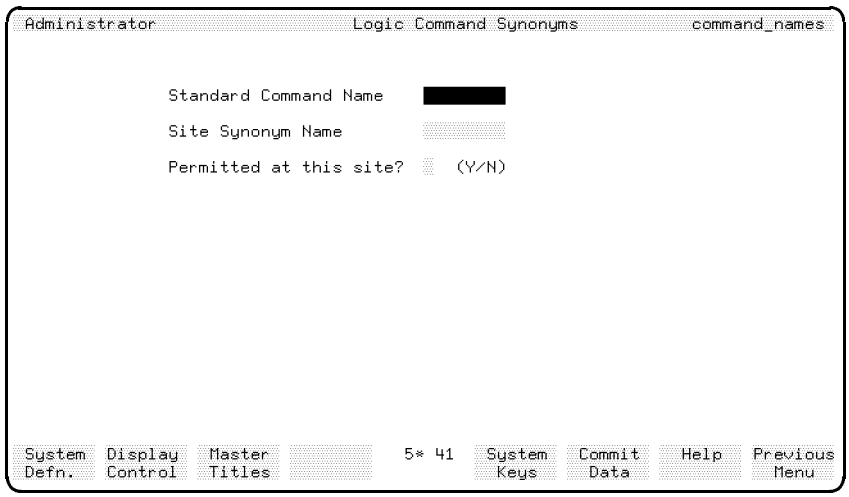
You don't need to assign end users to a user group. However, assigning users to groups can simplify the tasks of completing the user lists for application and versions by allowing you to specify a group name rather than entering the complete list of eligible users for the application or version. Similarly, using groups of users can reduce the amount of work involved in specifying the list of eligible users for menu items in the menu item security process.

End users need not to be aware of the fact that they are assigned to user groups. HP ALLBASE/4GL does not require the end user to enter a group name at any stage.

Logic Command Synonyms Screen

This screen allows you to define a synonym for each HP ALLBASE/4GL logic command. The screen also allows you to disable or enable logic commands. The logic command synonyms screen is accessed from the *System Specs* option on the main menu.

Screen Image



Field Descriptions

Standard Command Name. Enter the standard name of the logic command you want to disable or define a synonym for. Appendix A contains a list of logic commands.

Site Synonym Name. Enter the synonym to be used on this system to represent the command. The synonym can have up to eight uppercase alphabetic characters. HP ALLBASE/4GL automatically converts your entry to uppercase.

Permitted at this site. Enter `Y` to allow general use of the command. Enter `N` if you don't want the command to be used on this site.

Function Keys

(f1) `System Defn.` Cancels the current screen and displays the system definition screen.

(f2) `Display Control` Cancels the current screen and displays the terminal display control screen.

(f3) `Master Titles` Cancels the current screen and displays the master title definition screen.

Additional Information

Command name synonyms are not transferred with the application if you transport an application to another site with the unload/load facilities. You must define command name synonyms and permit or restrict use of the logic commands at each site.

All applications at each site must use the same synonyms. An application using different synonyms may fail. Similarly, removing a synonym from your system may cause applications using that synonym to fail. Existing generated logic is not affected by changes to synonyms, or by disabling a command.

Disabled Commands

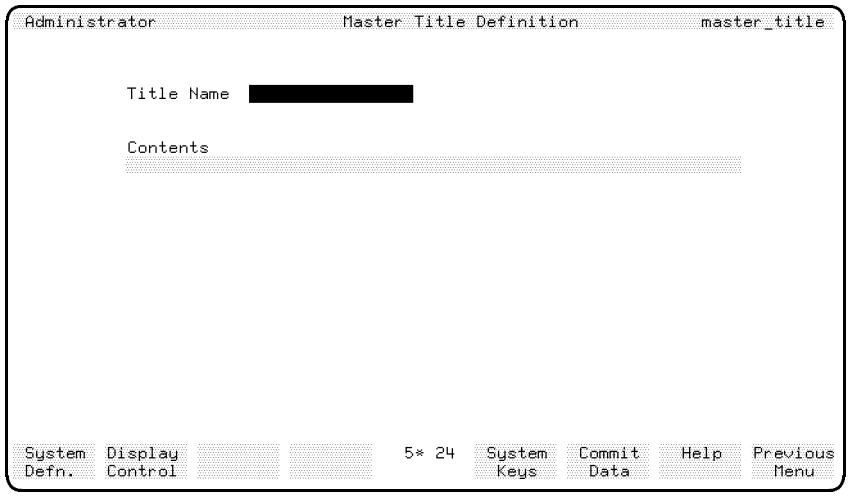
If you disable a command, application developers can still enter the disabled command in the process details or function details screens in the developer application. However, HP ALLBASE/4GL will not generate logic blocks containing the disabled commands.

Disabling a command deletes the synonym for that command if you have defined one.

Master Title Definition Screen

This screen allows you to define master titles. A master title is a literal that can be referenced by all developers for use on screens or reports. You can access this screen from the *System Specs* option on the main menu.

Screen Image



Field Descriptions

Title Name. Enter the name used to identify the title. The name can have up to 16 characters. The name must start with an alphabetic character and can use alphabetic characters, 0 to 9, and _ (underscore).

Contents. Enter the text of the title, as it is to be displayed. The title can have up to 60 characters. You can use any printable characters, including spaces. Don't use quotes (") unless you want them to be part of the title.

Function Keys

f1 `System Defn.` Cancels the current screen and displays the system definition screen.

f2 `Display Control` Cancels the current screen and displays the terminal display control screen.

Additional Information

Application developers can reference master titles from the screen painter and report painter in the developer application. In addition, application developers can reference master titles from some logic commands in logic blocks in an application.

When HP ALLBASE/4GL encounters a reference to a master title (in the form M- *titlename*), it first searches for a local application title with the same name. If the developer has not defined a local application title, HP ALLBASE/4GL uses the contents of the master title.

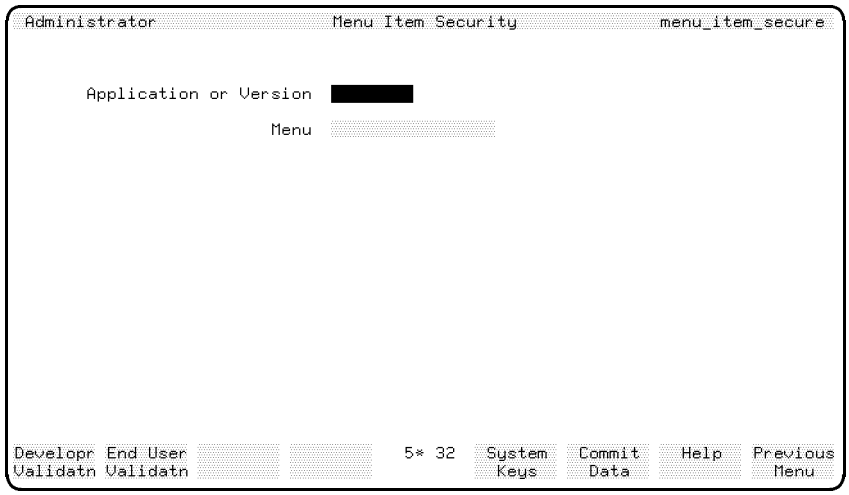
Menu Item Security Screen

This screen can be accessed from the *Users* option on the main menu. The menu item security screen allows you to restrict access to particular items in any menu of an application or version. If you don't restrict access to a particular menu item, all valid users for the application or version can execute the menu item. If you do restrict access to a particular item, only the users or groups of users defined on the menu item validation screen can execute the item.

If you decide to secure menu items in an application, you must be careful to apply the security at the lowest level of the menu structure of the application. In other words, you must apply the security at the menu items that lead directly to the screens or processes you want to secure. If you apply security at higher levels in the menu structure of the application, users may be able to use the menu bypass facility to bypass the security on menu items.

The menu item security system does not prevent users from accessing screens via function keys.

Screen Image



Field Descriptions

Application or Version. Enter the name of the application or version containing the menu item you wish to secure.

Menu. Enter the name of the application or version menu containing the item you wish to secure.

Function Keys

f1 `Developr Validatn` Cancels the current screen and displays the developer validation screen.

f2 `End User Validatn` Cancels the current screen and displays the end user validation screen.

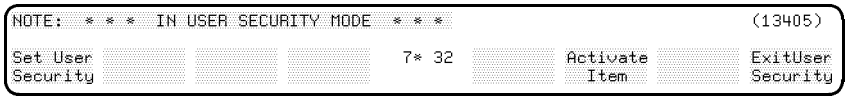
f6 `Commit Data` Initiates the menu item security procedure for the nominated application menu. Refer to Securing an Application Menu below for a description of the procedure.

Securing an Application Menu

When you press the `Commit Data` function key to confirm your entry on the menu item security screen, the system responds by displaying the menu you nominate, and reloading the function keys. The following message appears in the menu:

```
NOTE  * * *  IN SECURITY MODE  * * *
```

HP ALLBASE/4GL displays the following function keys:



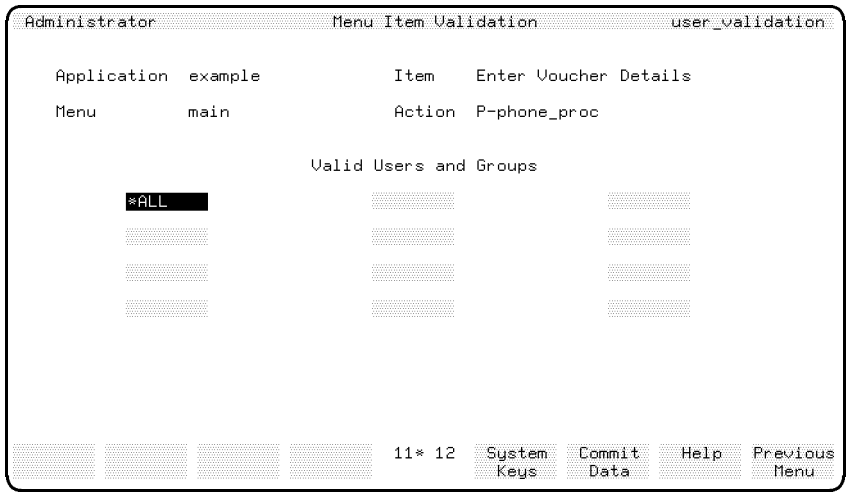
Press the `Set User Security` function key to secure the currently selected menu item. HP ALLBASE/4GL responds by displaying the menu item validation screen.

Pressing Return or the Activate Item function key displays the current menu item if it links to another menu.

Menu Item Validation Screen

This screen allows you to define a list of users, or groups of users, who can execute the nominated menu item.

Screen Image



Field Descriptions

The first four fields on this screen are display-only fields. For the application being secured, HP ALLBASE/4GL displays its name, the name of the menu, the name of the menu item, and the action performed by the menu item.

Application. The name of the application or version currently being secured.

Menu. The name of the current menu.

Item. The title of the current menu item selected.

Action. The name of the logic action performed by HP ALLBASE/4GL when the user selects this menu item.

Valid Users and Groups. Enter the name of each valid end user and/or user group to be allowed access to the menu item. If you don't enter anything in these fields, **all** users will be able to access the menu item.

When you have completed your entries for the current menu item, press the `Commit Data` function key.

Limitations

The HP ALLBASE/4GL menu item security system relies on an internal user name list. Since the user name lists will not be the same on different HP ALLBASE/4GL systems, menu item security definitions that are unloaded with applications will not be valid if the application is loaded into a different HP ALLBASE/4GL system.

You must apply menu item security at each individual site.

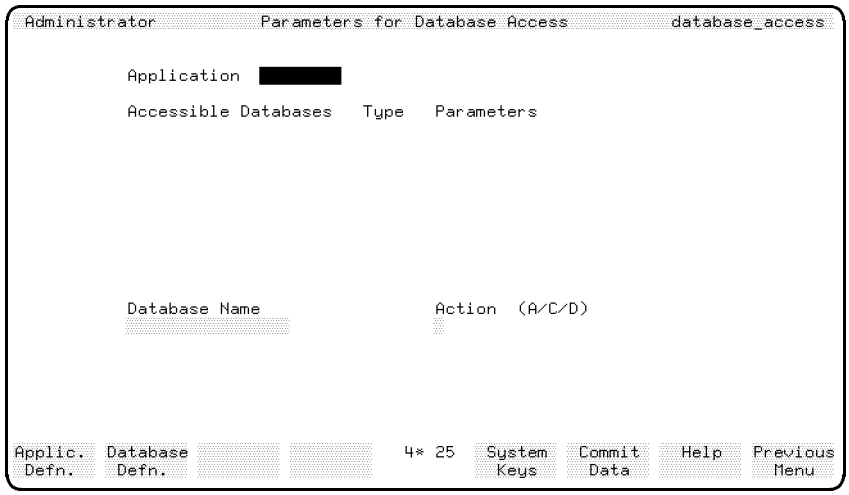
Menu item security definitions are also overwritten if you use the application loading facility to update an existing application. You must redefine the menu item security after you have loaded the application.

Parameters for Database Access Screen

This screen allows you specify the HP TurboIMAGE/iX databases that may be accessed by an application. For each database, you must also specify the user class password that the application will use to access the database.

You can access this screen from the *DB Access* option on the main menu.

Screen Image



Field Descriptions

Application. Enter the name of the application for which you wish to specify the accessible databases.

When you commit this field, a list of all databases currently accessible by the application is displayed on the screen.

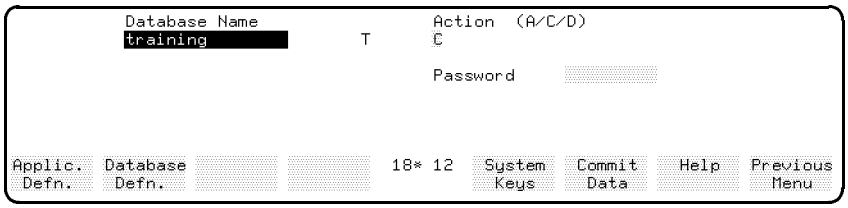
List of Database Access Parameters. The scroll area on the second half of the screen contains a list of all databases accessible by the application specified in the *Application* field. If the list is too long to be displayed on the screen, you can move through the list by using the `Next` and `Previous` function keys.

The user class passwords are not displayed in the list, as a precaution against unauthorised passers-by seeing the screen when it is displayed. If you wish to see the user class password for a database, you must complete the following fields:

Database Name. Enter the name of a database accessed by the application. This is the internal HP ALLBASE/4GL name of the database. This database must be defined on the database definition screen before any access parameters can be set for the database.

After you enter this field, a window is displayed containing the database access parameter fields relevant to the type of database indicated in the *Type* field. If the database name already exists on the list of accessible databases, the window fields will contain the current values set for the database.

Currently, only the HP TurboIMAGE/iX database window is displayed.



Database Type. This is a display-only field which indicates the database type. A `T` in this field indicates that the database is an HP TurboIMAGE/iX database. A question mark (?) in this field indicates that the database definition has been deleted by the HP ALLBASE/4GL administrator. In this case, the database must be redefined on the database definition screen before the application can access the database.

Action. Enter the code of the action to be performed on the specified database. Choose from one of the following:

Code	Action
A	Add a database to the application.
C	Change or view the database's access parameters.
D	Delete a database from an application.

Password.

Enter a password for an HP TurboIMAGE/iX user class. The password must be a valid user class password for the database, as defined by the HP TurboIMAGE/iX administrator. The password that you enter in this field determines the read and write access permissions of the database for this application, for all application developers and end users.

This field is optional, and if you leave the field blank, HP TurboIMAGE/iX will interpret the access permissions to be those of user class zero, which has no password.

A database password only applies to the specified application. If a database is accessed by more than one application, the password may be different for each application.

Function Keys

f1 `Applic. Defn` Cancels the current screen and displays the application definition screen.

f2 `Database Defn.` Cancels the current screen and displays the database definition screen.

f3 `Previous` Displays the previous screenful of databases accessible from the current application.

f4 `Next` Displays the next screenful of databases accessible from the current application.

Additional Information

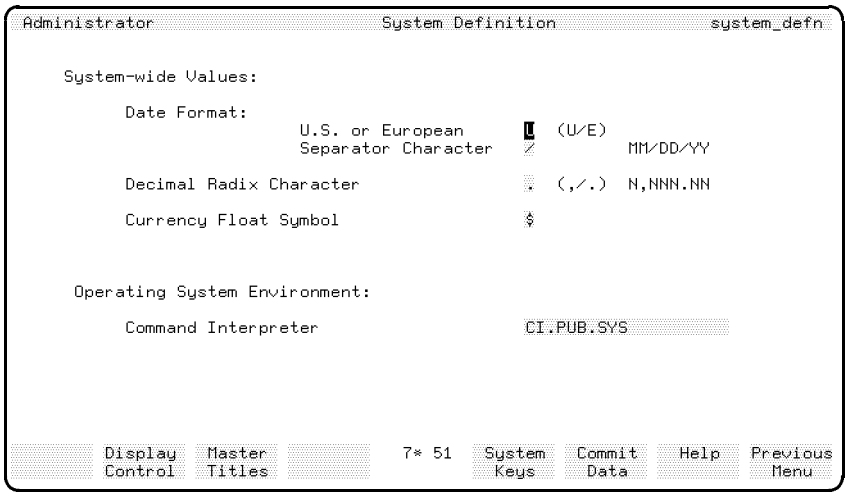
Developers cannot reference a database in an application until access to the database is granted to the application on this screen.

System Definition Screen

This screen allows you to define the system-wide date format, decimal radix character, and currency float symbol. It also allows you to define certain aspects of the operating system environment for HP ALLBASE/4GL.

The system definition screen is accessed from the *System Specs* option on the main menu.

Screen Image



Field Descriptions

System-Wide Values

Date Format: U.S. or European. Enter `U` if you want to display dates in US format (MM/DD/YY). Otherwise, enter `E` to display dates in European format (DD/MM/YY).

Date Format: Separator Character. Enter a single character (typically /) to separate the day, month, and year on screens and reports.

Note

HP ALLBASE/4GL stores dates internally in the form YY/MM/DD regardless of the date format specified in the above two fields. The system wide date format definition only controls the way that HP ALLBASE/4GL presents dates on screens and reports.

Decimal Radix Character.

The entry in this field controls the decimal punctuation of numbers printed on reports.

Enter either . or , to separate whole numbers and decimal parts of numbers. Generally, English speaking countries use . with the number format *n,nnn.nn*. European nations use , with the number format *n.nnn,nn*.

Currency Float Symbol.

Enter a float character to precede currency values on reports. The default character is $.

Operating System Environment

Command Interpreter. Enter the name of the default MPE/iX command interpreter program to be run if the user presses the `Op. System` function key.

Users can execute a specific a command interpreter by setting the MPE/iX variable HP4CI to the name of a program. (Users can also specify the name of a program by setting the MPE/iX variable SHELL to the name of a program.) In this case, MPE/iX executes the program defined by this variable whenever the user presses the `Op. System` function key. The system will only call the command interpreter you specify on this screen if the HP4CI variable is not set.

Function Keys

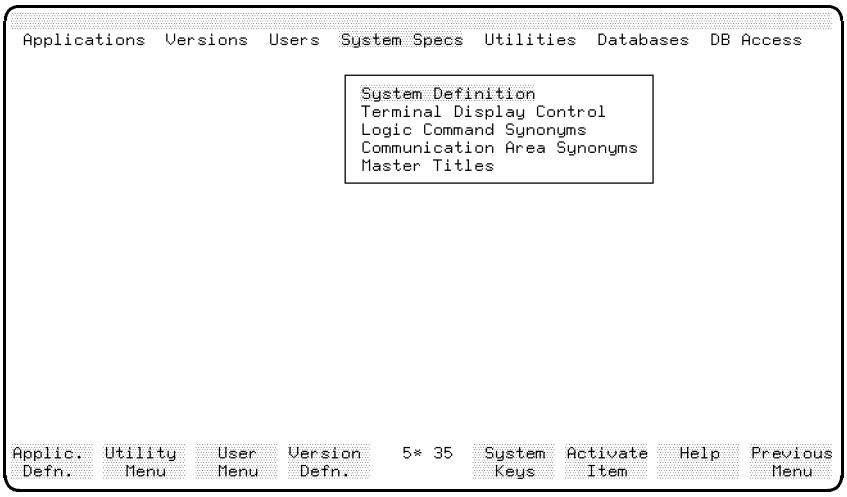
f2 `Display Control` Cancels the current screen and displays the terminal display control screen.

f3 `Master Titles` Cancels the current screen and displays the master title definition screen.

System-Wide Specifications Menu

This menu appears when you choose the *System Specs* option on the main menu. The system-wide specifications menu allows you to access the screens used to define various system-wide values and defaults, terminal display attributes, command and communication area name synonyms, and master titles.

Screen Image



Menu Selections

System Definition. This selection displays the system definition screen. From this screen, you can define the system-wide values and defaults that apply throughout HP ALLBASE/4GL.

Terminal Display Control. This selection displays the terminal display control screen. This screen allows you to define the display enhancements for all HP ALLBASE/4GL terminals on the system.

Logic Command Synonyms. This selection displays the logic command synonyms screen. This screen allows you to define a synonym for each logic

command name. It also allows you to disable particular commands for your site.

Communication Area Synonyms. This selection displays the communication area synonyms screen. This screen allows you to define a synonym for each communication area name.

Master Titles. This selection displays the master titles screen, which allows you to define system-wide titles.

Function Keys

f1 `Applic.Defn.` Cancels the current screen and displays the application definition screen.

f2 `Utility Menu` Cancels the current screen and displays the utilities menu.

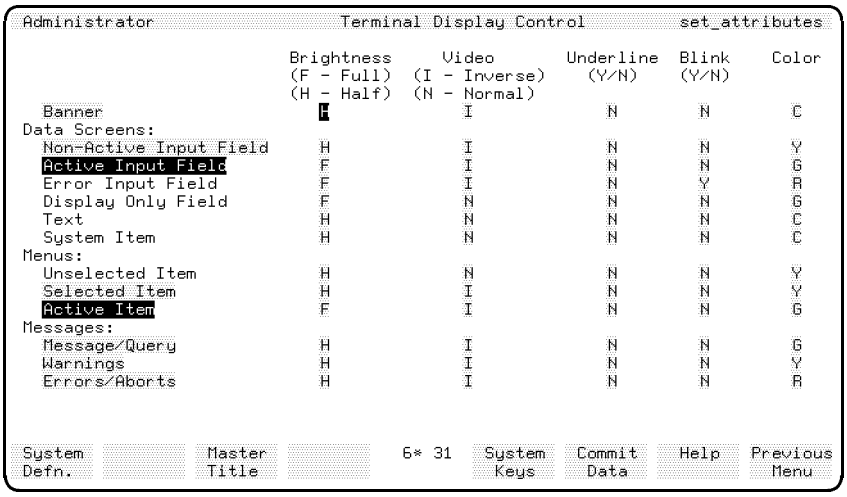
f3 `User Menu` Cancels the current screen and displays the user validation menu.

f4 `Version Defn.` Cancels the current screen and displays the version definition screen.

Terminal Display Control Screen

This screen allows you to define the enhancements that are applied to items displayed on HP ALLBASE/4GL terminal screens. The same screen enhancements apply to all HP ALLBASE/4GL terminals. You can access the terminal display control screen from the *System Specs* option on the main menu.

Screen Image



Field Descriptions

Brightness. Enter `F` to display the screen item at full brightness; enter `H` to display the item at half brightness.

Video. Enter `I` to display the screen item in inverse video; enter `N` to display the item in normal video.

Underline. Enter `Y` to display the screen item underlined; otherwise enter `N`.

Blink. Enter `Y` to display the screen item blinking; otherwise enter `N`.

Color. For color terminals, enter a code to display the screen item in white or in one of the six available colors. For monochrome terminals, leave the field

blank. This displays the item in white (if normal video is selected). Many monochrome terminals use green or amber instead of white.

The colors and their codes are:

R	Red
B	Blue
G	Green
Y	Yellow
C	Cyan (light blue)
M	Magenta
W	White (green on green screens, amber on amber screens)

Use blue carefully. Blue can appear to be very dark on some color terminals and can be hard to read. Use cyan in preference to blue.

Function Keys

f1 `System Defn.` Cancels the current screen and displays the system definition screen.

f3 `Master Title` Cancels the current screen and displays the master title definition screen.

Additional Information

To allow you to judge the appearance of your selections, each screen item title displays the attributes you have selected.

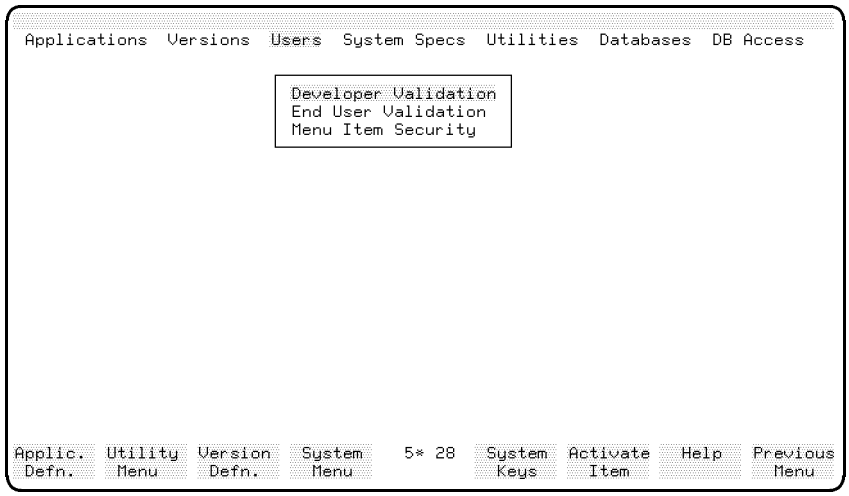
Most color terminals don't support color and half-brightness for the same item. If you specify both, the color attribute takes precedence.

Monochrome terminals ignore the color attributes.

User Validation Menu

The user validation menu allows you to access the screens used to define developers, end users, and menu item security. You can access this menu from the *Users* option on the main menu.

Screen Image



Menu Selections

Developer Validation. This option displays the developer validation screen. This screen allows you to define names and passwords for application developers.

This screen also allows you to define or change the password for the system administrator.

End User Validation. This option displays the end user validation screen. This screen allows you to define the name, user group, and password for each application end user.

Menu Item Security. This option displays the menu item security screen. This screen enables you to control user and group access to specific menu items.

Function Keys

f1 `Applic. Defn.` Cancels the current screen and displays the application definition screen.

f2 `Utility Menu` Cancels the current screen and displays the utilities menu.

f3 `Version Defn.` Cancels the current screen and displays the version definition screen.

f4 `System Menu` Cancels the current screen and displays the system-wide specifications menu.

Version Definition Screen

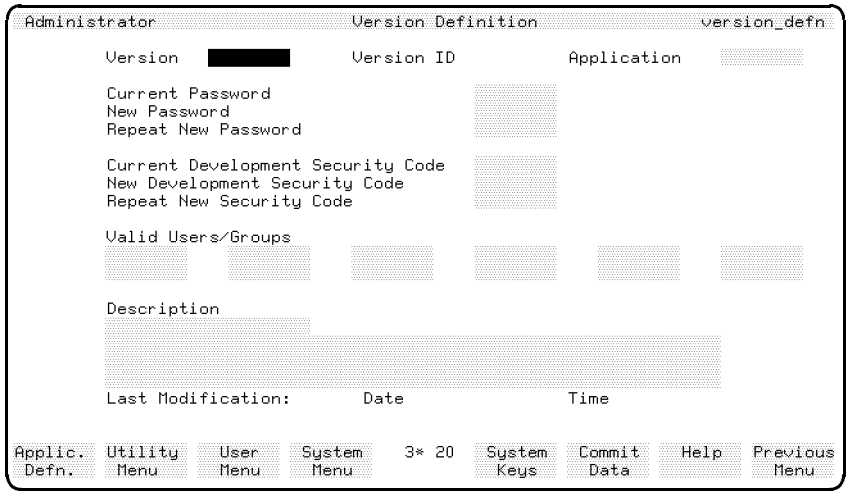
This screen can be accessed from the *Versions* option on the main menu. The version definition screen allows you to define the name, password, and users for a version. The screen also allows you to define the development security code for the version.

A version is a set of additional parameters that operate in conjunction with an application to modify the application to suit the needs of a particular user or group of users.

Note

The base application must exist before you can define a version of an application.

Screen Image



Field Descriptions

Version. Enter the name used to identify the version. Version names must start with an alphabetic character, and can have up to eight characters. The version name can use the characters *A* to *Z*, and *0* to *9*. The version name must be unique.

You cannot use any of the following reserved application names as version names: *administ*, *developr*, *HPlogo*, *hpqm*, *HPLIBnnn* or *ULIBnnn* (where nnn is the three-digit language identifier).

HP ALLBASE/4GL uses the version name as the name for files that are created during the application unloading process and the generation process. The version name must be a legal MPE/iX file name.

Note

HP ALLBASE/4GL is case sensitive with respect to version names even though MPE/iX file names are not case sensitive. This means that you must be careful about your choice of version names. For example, HP ALLBASE/4GL regards the two versions *Accounts* and *ACCOUNTS* as distinct. However, the files generated during the application unloading process and the application generation process for both versions have the name ACCOUNTS.

A version cannot have the same name as its base application, or any other application or version on the system.

Version ID. This is a display-only field. It displays an identification number for the version.

Application. The field becomes an input field if you have entered a new version name in the *Version* field. In this case, enter the name of the application on which you want to base the version. This application must exist before you can define the version.

This field becomes a display-only field if you have entered an existing version name in the *Version* field. In this case, the field displays the name of the base application of the version you have named. You can't change the application name in this case.

Current Password. This field is only active if you have already defined a password for the version.

If you want to change the existing password for a version, enter the current password in this field.

New Password. Optional. Enter a password for the version. Passwords must start with an alphabetic character and can have up to eight characters. Passwords can contain alphabetic characters, 0 to 9, and _ (underscore). HP ALLBASE/4GL is case sensitive with respect to passwords.

HP ALLBASE/4GL does not echo the password on the screen as you type it in.

Repeat New Password. Reenter the new password for the version. If you don't reenter exactly the same password, HP ALLBASE/4GL displays an error message, and returns the cursor to the *New Password* field

---

Note

The version password only applies to end users of the version. If you define a password for a version, the end user must enter the password on the HP ALLBASE/4GL sign-on screen to access the version. Developer users can access the version without entering the password.

Current Development Security Code. This field is only active if you have already defined a development security code for the version. If you want to change the existing development security code for a version, enter the current development security code in this field.

New Development Security Code. Enter a new development security code in this field. HP ALLBASE/4GL does not echo the code as you type it in.

The version development security code must start with an alphabetic character and can contain up to eight characters. Development security codes can contain alphabetic characters, 0 to 9, and _ (underscore). HP ALLBASE/4GL is case sensitive with respect to development security codes.

Repeat New Security Code. Reenter the new development security code in this field. If you don't enter exactly the same code as you entered in the field above, HP ALLBASE/4GL displays an error message and returns the cursor to the *New Development Security Code* field.

Valid Users/Groups. Enter the name of each end user, or user group to be allowed to access the version. For a version under development, you must include the name of the developers in the user list.

The end user names, user groups, and developer names must be defined on the relevant user validation screen before you can enter the names here. Enter `*ALL` to allow all users and developers access to the version.

Description. These are documentation fields. Enter a description of the version. HP ALLBASE/4GL automatically records the time and date of the last modification.

Function Keys

f1 `Applic. Defn` Cancels the current screen and displays the application definition screen.

f2 `Utility Menu` Cancels the current screen and displays the administrator utilities menu.

f3 `User Menu` Cancels the current screen and displays the user validation menu.

f4 `System Menu` Cancels the current screen and displays the system-wide specifications menu.

Additional Information

If you assign a development security code to a version, the original developer can ensure that secured items within the version can only be modified by a developer who has signed on to the version under the correct development security code.

When all the required fields on the appropriate developer screen have been completed, the developer of the version can secure items by setting the secured field for the items to `Y`. Refer to the *HP ALLBASE/4GL Developer Reference Manual* for details of the items that can be secured.

A developer can still sign on to the version without entering the development security code. Under these circumstances, the developer can examine the secured components of the version, but cannot change them.

A

HP ALLBASE/4GL Logic Command Names

This appendix provides a brief description of each of the HP ALLBASE/4GL logic commands.

BACKGRND	Executes an HP ALLBASE/4GL process as a background task.
CALC	Calculates the result of an arithmetic expression with two or more operands.
CALL	Provides dynamic loading of functions written in the C programming language.
CHECK	Matches a value against an HP ALLBASE/4GL table of values or a series of fields in a file record.
CLEAR	Clears part or all of a screen or the scratch pad.
DATE	Performs a variety of calculations on date fields.
DECISION	Executes an HP ALLBASE/4GL decision table.
DEFINE	Creates an abbreviation for substitution in the current logic block.
DISPLAY	Clears or displays a line of data in the screen's scroll area.
DM IMAGE	Performs various operations specific to HP TurboIMAGE/iX databases.
ENTER	Specifies the next logic block step to be executed.
EXIT	Terminates processing of the current logic block.
EXTERNAL	Transfers program execution to an external program in a language other than HP ALLBASE/4GL.

FIELD	Changes the behavior or attributes of a field on an application screen.
FILE	Performs various file operations on an HP ALLBASE/4GL data file.
IF	Performs one or more actions as a result of testing one or two conditions.
IFLOOP	Performs a conditional test repeatedly.
KEYS	Displays a set of function keys on an application screen.
LENGTH	Calculates the number of characters in a field.
LINK	Concatenates a number of fields.
LINKLOOP	Concatenates a series of consecutive fields.
MATH	Calculates a two operand arithmetic expression.
MATHLOOP	Repeatedly calculates a two operand arithmetic expression.
MESSAGE	Displays a message in the message area of the screen.
MODE	Specifies the way files are to be accessed in the current process.
MOVE	Copies the contents of one field to another field.
MOVELOOP	Copies consecutive fields to other consecutive fields.
NOTE	Inserts a comment into a logic block.
OFF	Sets a switch *OFF*.
ON	Sets a switch *ON*.
PRINT	Prints a report line on the current report.
PROCEED	Executes a process logic block.
REPORT	Executes a report.
SCREEN	Displays a screen.
SCROLL	Displays a line of data in the screen's scroll area.

SELECT	Executes one of a series of commands depending on the value of *PASS.
SERIES	Executes a range of steps in the current logic block.
SHOW	Displays the contents of a field or range of fields on the current screen.
SQL	Executes the commands in an SQL logic block.
TIE	Specifies the next field to process on the current screen.
TOP	Returns to the first step of the current logic block.
TRANSACT	Defines groups of logically related file operations that make up one transaction.
UPDATE	Writes all changed data file buffers to file.
VALIDATE	Checks for the presence or absence of data in a file field.
VISIT	Executes an HP ALLBASE/4GL function logic block.
WINDOW	Displays a window in the window area of the current screen.
ZIP	Performs no operation.

FINAL TRIM SIZE : 7.0 in x 8.5 in

B

HP ALLBASE/4GL Communication Area Names

***COUNT(n)**	Five numeric work variables used primarily by the report generator.
***CROSS(n)**	Five numeric work variables used primarily by the report generator.
***DATE**	An alphanumeric field containing the current system date.
***DBENAME**	An alphanumeric field containing the name of the HP ALLBASE/SQL database used by the application.
***ERROR**	An alphanumeric field containing the text of generic error messages returned from HP ALLBASE/4GL and error messages returned from HP ALLBASE/SQL.
***ERRORDM**	An alphanumeric field containing the text of any errors returned by a data manager. Currently only the text of HP TurboIMAGE/iX data manager error messages are returned to this field.
***FIELDNO**	A numeric field containing either the current screen field number or set to the number of the next screen field to process.
***FILENAME**	An alphanumeric field containing the external name of the KSAM data file or serial file currently being accessed or most recently accessed.
***FUNCTION**	An alphanumeric field containing the name of the current function logic block.
***INDEXNO**	A numeric field containing the number of the current file index.

***IMSTATUS**	Contains the HP TurboIMAGE/iX status array, which represents status information about the last HP TurboIMAGE/iX library procedure performed.
***INDEXNO**	A numeric field containing the number of the current KSAM file index or HP TurboIMAGE/iX data set index.
***IOSTATDM**	A numeric field containing the error message number of any errors returned by a data manager. Currently only HP TurboIMAGE/iX data manager error return codes are returned to this field.
***IOSTATUS**	A numeric field containing the HP ALLBASE/4GL data manager file return code.
***KEYS**	An alphanumeric field containing the name of the current function key set.
***LOCKWAIT**	A numeric field containing a number equal to the number of seconds that HP ALLBASE/4GL waits while trying to access a KSAM file record or HP TurboIMAGE/iX data set record that is locked by another user.
***LTRACE**	A numeric field used for turning on and off Trace mode. When set to one, the trace facility is turned on; when set to zero, the trace facility is turned off. The same rules apply as for the *-i* option; for instance, run-time systems and `developr` and `administ` applications cannot be traced.
***MSGDELAY**	A numeric field used for setting the number of seconds after a message is displayed before HP ALLBASE/4GL processing continues. Any positive integer in this field signifies the number of wait seconds. HP ALLBASE/4GL default delay time is three seconds. A zero value will cause HP ALLBASE/4GL to display the message and immediately continue processing.
***NEWTIE**	A numeric field containing the next screen field number to process.

***PAGELINE**	A numeric field containing the current line number of the current report page.
***PAGENO**	A numeric field containing the current page number of the current report.
***PASS**	A general purpose alphanumeric field.
***PREVFLD**	A numeric field containing the number of the last screen field to be successfully committed.
***PROCESS**	An alphanumeric field containing the name of the current process logic block.
***RECNO**	A numeric field containing the number of the file record just read or written for a fixed length record serial data file or an HP TurboIMAGE/iX data set.
***REPORT**	An alphanumeric field containing the name of the current report.
***ROUTINE**	An alphanumeric field containing the name of the current or last called external routine.
***ROWCOUNT**	A numeric field indicating the number of rows in an HP ALLBASE/SQL table that are changed as the result of a command that modifies a table.
***SCREEN**	An alphanumeric field containing the name of the current screen.
***SUITE**	An alphanumeric field containing the name of the current application.
***TIME**	An alphanumeric field containing the current system time.
***TOTALS(n)**	Sixteen numeric working variables used mainly by the report generator.
***USER**	An alphanumeric field containing the current user's name.
***VERSION**	An alphanumeric field containing the name of the current application if it is a version of a base application.

FINAL TRIM SIZE : 7.0 in x 8.5 in

C

Operating System Environment

This appendix describes the MPE/iX operating system environment established for HP ALLBASE/4GL. The description is under the following subheadings:

- HP ALLBASE/4GL Files.
- MPE/iX Account Structure.
- MPE/iX Formal File Designators.
- MPE/iX Variables.
- S-file Size Limits.
- Multiple HP ALLBASE/4GL Systems.
- Start-Up Command File.
- Screen Image Printing.
- Hardware and MPE Clock Settings.
- HP ALLBASE/4GL Terminals.

For the majority of installations, the default HP ALLBASE/4GL environment should not require any modification.

In general, you should not make any changes to the default operating system environment for HP ALLBASE/4GL. Incorrect changes may prevent HP ALLBASE/4GL from operating correctly and may even prevent you from running the system at all. Don't change the MPE/iX environment for HP ALLBASE/4GL, unless you are fully experienced in using the MPE/iX operating system and have a good understanding of the environment needed to support HP ALLBASE/4GL.

Note

You may adversely affect future product support and your ability to use future product enhancements if you make any changes to the operating system environment for HP ALLBASE/4GL.

HP ALLBASE/4GL Files

HP ALLBASE/4GL uses a number of different types of files. They are:

- S-files.
- Program files.
- Command files.
- Application databases.
- Terminal support files.

S-Files

The HP ALLBASE/4GL S-files are a set of 11 pairs of files. They contain the definition of any completed applications on the system, and the application developers' input for applications under development. The S-files are named S01D to S11D, and S01I to S11I.

Each S-file consists of a pair of files. One file is a data file (identified by the *D* suffix on the name), and the other file is an index file (identified by the *I* suffix on the name). Each index file is matched to the corresponding data file and must not be copied separately, or deleted. If necessary, you can use the HP4REMK utility program to rebuild the S-file indexes. Refer to "Using Remake and Reorder", for information about the HP4REMK utility.

One set of S-files can support a number of applications and a number of users working simultaneously.

In effect, a set of S-files is an HP ALLBASE/4GL system. One MPE/iX system can support multiple sets of HP ALLBASE/4GL S-files. Each S-file

set requires a system administrator, and can support different system-wide configurations, user name lists, and applications.

Note

The developer environment S-files are not the same as the run-time environment S-files. The two types of S-files are not interchangeable.

All the files in each set of S-files must be in the same MPE/iX group and account.

Copying S-Files

If required, you can use more than one set of S-files on the MPE/iX system. If you do create more than one set of S-files, each set must reside in a separate MPE/iX group.

Caution

Always use the command file HP4SCOPY.HP4GL.SYS to create new copies of the HP ALLBASE/4GL S-files. Attempting to use FCOPY directly will waste disk space.

Each of the HP ALLBASE/4GL S-files has a file limit of 2 000 000 records to allow for expansion. Since the FCOPY command always creates a file with 32 extents, the first extent will occupy up to 250 000 sectors of disk space. To avoid using excessive disk space, the HP4SCOPY command file uses the BUILD command to create suitable files, and then copies the S-files into the new files.

To use the HP4SCOPY command file, enter the following command at the MPE/iX prompt:

```
HP4SCOPY.HP4GL.SYS src=src_grp [dest=dest_grp] [overwrite={Y|N}]
```

In this command, the term *src_grp* is the group containing the files you wish to copy, and *dest_grp* is the group you want to copy the files to.

For the HP ALLBASE/4GL developer environment, the MPE/iX sub-system installation procedure installs a set of S-files in the HP4GL.SYS group. In general, you should leave the S-files in the HP4GL.SYS group in their original

state. This ensures that you have a "clean" set of S-files if you need to establish a new HP ALLBASE/4GL environment.

For the HP ALLBASE/4GL run-time environment, the S-files are installed in the HP4GLR.SYS group. The HP4SCOPY command file is also in the HP4GLR.SYS group.

Refer to S-File Size Limits for more information about S-file sizes.

Program Files

The HP ALLBASE/4GL program files are the executable program files that run HP ALLBASE/4GL. Only one set of program files is required on each MPE/iX system, as more than one set of S-files can use the same set of program files simultaneously. The HP ALLBASE/4GL program files reside in the PUB group of the SYS account.

Some of the program files in the developer environment have an equivalent program file in the run-time environment. They differ sightly in functionality and therefore require a different name. To differentiate the developer version of a program file from its run-time equivalent, the run-time program file has an "R" appended to its name. Where this occurs it is indicated by the following notation:

```
filename[R]
```

The HP ALLBASE/4GL program files are listed in the table below.

Table C-1. Program Files in the Developer Environment

Name	Purpose	Stand-Alone Use
HP4ARPT	Administrator reports	No
HP4ATOS	ASCII to S-file conversion program	Stand-alone only
HP4CHKAP	Application consistency checker	Yes
HP4DRPT	Developer reports	No
HP4FUTL	File create/delete/reformat utility	No
HP4GEN	Generate program	No
HP4GLB	Main HP ALLBASE/4GL program	Yes
HP4LD	Application loading program	No
HP4REMK	S-file index rebuilding program	Stand-alone only
HP4REOD	S-file reorder/compacting program	Stand-alone only
HP4RP	Report painter	No
HP4SORT	Report sorting program	No
HP4SP	Screen painter	No
HP4STOA	S-file to ASCII conversion program	Stand-alone only
HP4TUPLD	HP TurboIMAGE/iX database definition loading program	Stand-alone only
HP4ULD	Application unloading program	No

Table C-2. Program Files in the Run-Time

Name	Purpose	Stand-Alone Use
HP4ARPTR	Administrator reports	No
HP4CHAPR	Application consistency checker	Yes
HP4FUTLR	File create/delete/reformat utility	No
HP4GLBR	Main HP ALLBASE/4GL program	Yes
HP4LDR	Application loading program	No
HP4REMKR	S-file index rebuilding program	Stand-alone only
HP4REODR	S-file reorder/compacting program	Stand-alone only
HP4SORTR	Report sorting program	No

MPE/iX Command Files

HP ALLBASE/4GL uses a number of MPE/iX command files. These files are used at the following times:

- During the product installation process.
- To start HP ALLBASE/4GL from the MPE/iX prompt.
- To create new copies of the HP ALLBASE/4GL system files.

The command files are located in the PUB.SYS group and the HP4GL[R].SYS group.

The command files are listed in the following table.

Table C-3. Command Files in the PUB.SYS

Name	Purpose	Stand-Alone Use
HP4GL	Start-up command file for HP ALLBASE/4GL developer	Yes
HP4GL2	Used by HP4GL command file	No
HP4GLR	Start-up command file for HP ALLBASE/4GL run-time environment	Yes
HP4GL2R	Used by HP4GLR command file	No

Table C-4. Command Files in the HP4GL[R].SYS

Name	Purpose	Stand-Alone Use
HP4BLD[R]	Builds HP ALLBASE/4GL environment during installation	Yes
HP4BLD2	Used by HP4BLD[R]	No
HP4SCOPY	Copies HP ALLBASE/4GL S-files (Used by HP4BLD[R])	Yes

Application Databases

HP ALLBASE/4GL provides facilities for applications to access HP ALLBASE/SQL and HP TurboIMAGE/iX databases. The databases used in an application can be located anywhere in the MPE/iX file system.

HP ALLBASE/4GL also provides the facilities needed to create and maintain KSAM data files and serial data files from within HP ALLBASE/4GL.

KSAM data files do not need to be unique to an HP ALLBASE/4GL application or even a set of HP ALLBASE/4GL S-files. However, we recommend that only applications in one set of S-files use any given set of data files.

Non-HP ALLBASE/4GL applications can use HP ALLBASE/4GL KSAM data files, however the HP ALLBASE/4GL transaction control system may not operate correctly if HP ALLBASE/4GL and non-HP ALLBASE/4GL applications use these data files simultaneously.

Terminal Support Files

Special files are required to provide the correct support for HP ALLBASE/4GL terminals. These files must be in the HP4TERM.SYS group and account.

Refer to HP ALLBASE/4GL Terminals for more information about these files.

MPE/iX Account Structure

The HP ALLBASE/4GL installation procedure requires you to create an MPE/iX account enabling it to create the default HP ALLBASE/4GL account structure. This section describes the structure created by the installation procedure.

The account for the HP ALLBASE/4GL system contains the following groups:

Developer Environment	Run-Time Environment	Purpose
HP4APPN	HP4APPNR	Unloaded application definitions
HP4DATA	HP4DATAR	KSAM and serial data files
HP4DBM	HP4DBMR	HP ALLBASE/SQL database modules
HP4FS	HP4FSR	KSAM file create/delete/reformat files
HP4S	HP4SR	HP ALLBASE/4GL S-files
HP4SQL	HP4SQLR	HP ALLBASE/SQL databases
HP4TI	HP4TIR	HP TurboIMAGE/iX databases

The developer and run-time environments use essentially the same groups. The only difference is the last character of the run-time environment group names. In the run-time environment, the group names all end with “R”. This is indicated by the following notation:

GROUP[R]

The following paragraphs explain the purpose of these groups.

HP4APPN[R] Group

This group is used for the files containing unloaded HP ALLBASE/4GL applications. The HP ALLBASE/4GL administrator application unloading facility creates files in this group to store the definitions of unloaded applications.

The administrator application loading utility reads the definition of the application to be loaded from a file in this group.

HP ALLBASE/4GL uses the MPE/iX variable HP4APPNPATH to identify the name and location of the group for the unloaded application definition file. The HP ALLBASE/4GL administrator must be able to create files in this group.

HP4DATA[R] Group

This group is available for KSAM and serial data files. You can use a different name for the group if desired, or locate the data files elsewhere in the MPE/iX file system.

By default, HP ALLBASE/4GL uses the MPE/iX variable HP4DATAPATH to identify the name and location of this group. HP4DATAPATH can be reset if another group is to be used to contain the HP TurboIMAGE/iX databases.

HP4DBM[R] Group

This group is used for the database module files for applications and versions.

HP ALLBASE/4GL uses the MPE/iX variable HP4DBMPATH to identify the name and location of the group containing the database module files. Application developers and the HP ALLBASE/4GL administrator must be able to create files in this group.

HP4FS[R] Group

This group is required if your applications use KSAM data files. It contains the file-structure files that are created when application developers create or reformat KSAM data files.

It is also used for file-structure files that may be required when the HP ALLBASE/4GL administrator loads or unloads a run-only application. These

files are part of the automatic data file reformatting system for run-only applications.

HP ALLBASE/4GL uses the MPE/iX variable HP4FSPATH to identify the name and location of this group. Application developers and the HP ALLBASE/4GL administrator must be able to create files in this group.

HP4S[R] Group

This group is used for the HP ALLBASE/4GL S-files. You can use a different name for this group if desired. HP ALLBASE/4GL uses the MPE/iX variable HP4SPATH to identify the name and location of this group.

HP ALLBASE/4GL can access S-files in any part of the MPE/iX file system. All HP ALLBASE/4GL users must have read, write and lock access permissions on the S-files.

HP4SQL[R] Group

This group is optional and is available for HP ALLBASE/SQL application databases. You can use a different name for the group if desired, or locate the HP ALLBASE/SQL databases elsewhere in the MPE/iX file system.

By default, HP ALLBASE/4GL uses the MPE/iX variable HP4SQLPATH to identify the name and location of this group. HP4SQPPATH can be reset if another group is to be used to contain the HP ALLBASE/SQL database.

HP4TI[R] Group

This group is optional and is available for HP TurboIMAGE/iX application databases. You can use a different name for the group if desired, or locate the HP TurboIMAGE/iX databases elsewhere in the MPE/iX file system.

By default, HP ALLBASE/4GL uses the MPE/iX variable HP4TIPATH to identify the name and location of this group. HP4TIPATH can be reset if another group is to be used to contain the HP TurboIMAGE/iX databases.

Formal File Designators

HP ALLBASE/4GL can receive inputs from a number of different sources, and direct output to a number of different destinations. The following table lists the formal file designators for the sources of inputs and the output destinations, the default devices, and the corresponding formal file designators. Each of these files can be equated using an MPE/iX file equation.

Formal File Designator	Default Device	Comments
HP4KYIN	$STDIN	If HP4KYIN is equated, keystrokes are read from the specified file. The file must use single byte ASCII records.
HP4SCOUT	$STDLIST	If HP4SCOUT is equated, screen output is written to the specified file. The default is a variable length record ASCII file with a maximum length of 1024 bytes.
HP4KYOUT	none	If HP4KYOUT is equated, keystrokes are logged to the specified file. Must be single byte ASCII records.
HP4RFLOG	DEV=DISC;TEMP	The log file produced by the KSAM file reformat facility. The default is a fixed length ASCII file with 256 byte records, and a file limit of 4000 records.
HP4GNERR	DEV=DISC;TEMP	Log file for all generate errors produced in a development session. The default is a fixed length ASCII file with 80 byte records, and a file limit of 1 000 000 records.
HP4TRACE	DEV=DISC;TEMP	Log file of all messages displayed while trace mode is active during a development session. The default is a fixed length record ASCII file with 160 byte records, and a file limit of 1 000 000 records.
HP4REP	DEV=LP	The destination for reports from the developer and administrator applications, and screens printed via the system printer. The default record size depends on the report being printed.

MPE/iX Variables

HP ALLBASE/4GL uses the following MPE/iX variables to identify the location of various items when a user signs on to HP ALLBASE/4GL.

HP ALLBASE/4GL also uses MPE/iX job control words (JCWs) to select the message catalog to suit the user's language, and set the collating sequence for KSAM files.

The HP ALLBASE/4GL start-up command file automatically sets appropriate values for the following variables and job control words.

- **HP4APPNPATH** This variable identifies the group and account containing any unloaded applications.
- **HP4DATAPATH** This variable identifies the group and account containing the KSAM and serial data files for an application.
- **HP4DBMPATH** This variable identifies the group and account containing any database module files created for an unloaded application.
- **HP4FSPATH** This variable identifies the group and account containing the file-structure files. These files are required when application developers create or reformat KSAM data files, or the administrator loads or unloads a run-only application requiring reformatting of KSAM data file reformatting.
- **HP4SPATH** This variable identifies the group and account containing the HP ALLBASE/4GL S-files.
- **HP4SQLPATH** This variable identifies the group and account containing the DBECon file for the HP ALLBASE/SQL database environment used by an application that accesses HP ALLBASE/SQL.
- **HP4TERM** This variable identifies the user's terminal type. The value of this variable determines the name of the termdata file used by HP ALLBASE/4GL to drive the terminal. Refer to HP ALLBASE/4GL Terminals for more information about terminals.
- **HP4TIPATH** This variable identifies the group and account containing the HP TurboIMAGE/iX databases used by an application.
- **NLDATALANG** The KSAM data manager uses this variable to determine the collating sequence during the data file creation process. By default, this job control word is set to 001 (American).

- **NLUSERLANG** HP ALLBASE/4GL uses this job control word to select the appropriate message catalog. By default, this job control word is set to 001 (American). Refer to Message Catalogs for information about the messages system.

HP ALLBASE/4GL uses the following MPE/iX variables for various MPE/iX and HP ALLBASE/4GL activities. HP ALLBASE/4GL assigns default values to some of these variables—-these values are noted below. Values can be assigned to these variables via a UDC or command file, or directly from the MPE/iX command interpreter.

- **HP4BG** This variable contains a job logon stream (including passwords) to allow HP ALLBASE/4GL to create and stream jobs to run background processes.
- **HP4DBMSIZE** If set, this variable indicates the file limit for the database module files created by HP ALLBASE/4GL. The database module file is a binary file, with 500 byte records. The default value is 4095.
- **HP4INV_PRT_CHAR** This variable specifies the character used when screen printing to indicate a space character in an inverse video field. The default value is the DEL character, which prints a checkerboard pattern on some printers. In some circumstances the DEL character may be interpreted incorrectly and may cause unreliable printing. If this occurs, change the value of this variable to a printable ASCII character, such as a hash (#).
- **HP4SCREEN_PRINT** This defines the destination printer that will print HP ALLBASE/4GL screen images. Refer to Screen Image Printing for more details.

S-File Size Limits

The source and generated code for all HP ALLBASE/4GL applications is stored in the S-files. As you create further applications or increase the size of an application, there is a greater demand for storage space in the S-files.

The MPE/iX operating system uses files of a predetermined maximum size. The HP ALLBASE/4GL installation procedure establishes an arbitrary limit of 2 000 000 records for each S-file. Under normal circumstances, this limit is far in excess of the required file size.

Note

Under the MPE/iX operating system, the amount of disk space used by a file depends on the number of records in the file, and not the file limit. Reducing the file limit for the HP ALLBASE/4GL S-files will not have any effect on disk space usage.

If the file limits for any S-files have been reduced, it is possible to reach a situation where the S-files cannot accommodate new records. At the start of each session, and whenever you attempt to write a record to the S-files, HP ALLBASE/4GL checks the amount of space available in the S-files. HP ALLBASE/4GL issues a warning message, and then aborts if you attempt to write a record to the S-files, and there is insufficient space available in the files.

If the S-file size limits have been reduced, the available space can become exhausted for the following reasons:

- The files contain a large number of logically deleted records.
- The number of active records in the file is close to the file limit.

When HP ALLBASE/4GL deletes a record from the S-files, the record is marked as logically deleted, but it is not deleted physically. Records are logically deleted from the S-files when an application component is deleted using the *Deletions* screen in the developer utilities menu, or an entire application is deleted using the administrator deletions utility. The HP4REMK and HP4REOD utility programs allow you to remake the S-file indexes, and rebuild the S-file data files. This process purges logically deleted records.

If removing logically deleted records does not provide sufficient space in the S-files, you must increase the file limits.

Using Remake and Reorder

The HP4REMK[R] and HP4REOD[R] utility program have the following purpose:

- **HP4REMK[R]** This program is known as "remake". It remakes the index portion of an S-file. It reorganizes the "I" suffix file by balancing the index tree, reclaiming any dead space, and checking for invalid indexes.
- **HP4REOD[R]** This program is known as "reorder". It reorders the data portion of an S-file. It reorganizes the "D" suffix file by recreating it in index sequence and purging any logically deleted records.

Caution

Always run HP4REMK on an S-file set before running HP4REOD. Make sure that all users have signed off from HP ALLBASE/4GL before you run these programs.

Before you run these programs you must set the MPE/iX variable HP4SPATH to indicate the group and account in which the S-files reside. For example, if the S-files are in the HP4S.HP4GL group and account, you must set the HP4SPATH variable as follows:

```
SETVAR HP4SPATH "HP4S.HP4GL"
```

To run the programs, exit from HP ALLBASE/4GL, and enter the following commands at the MPE/iX prompt:

```
HP4REMK '[n[-m]]'

HP4REOD '[n[-m]]'
```

where *n* and *m* are numbers between 1 and 11 indicating the S-file, or range of S-files that you wish to remake or reorder. If you do not specify a value on the command line, the program will ask you which file to remake or reorder.

Increasing the S-File Limits

If running HP4REMK and HP4REOD does not reclaim sufficient free space in the S-files, the files concerned must be enlarged.

You can enlarge the files with the HP4REMK and HP4REOD utilities, or you can use MPE/iX commands directly.

To enlarge the S-files using HP4REMK and HP4REOD, the commands are:

```
HP4REMK '-l ddddd [n[-m]]'

HP4REOD '-l ddddd [n[-m]]'
```

In these commands, *ddddd* is the file limit for the enlarged files, and *n* and *m* are values between 1 and 11 to indicate the file to be enlarged. Note that you must set the MPE/iX variable HP4SPATH before you execute these commands.

Alternatively, you can use the following MPE/iX commands to enlarge the files:

```
FILE *TEMPFILE;DISC=nnnnn
FCOPY FROM=Snn?;TO=*TEMPFILE;NEW
PURGE Snn?
RENAME TEMPFILE,Snn?
```

In these commands, *nnnnn* is the file limit for the enlarged file, and Snn? is the S-file that you want to enlarge.

Message Catalogs

The messages displayed by HP ALLBASE/4GL are stored in a message catalog in the PUB.SYS group and account. The catalog is stored in a keyed file called *HP4nnn* in the developer environment, and *HP4Rnnn* in the run-time environment. The key file is called *HP4nnnK* or *HP4RnnnK* in the developer and run-time environments respectively. In these file names, the term *nnn* is a three digit number identifying the user's current language.

HP ALLBASE/4GL uses the job control word (JCW) NLUSERLANG to determine which message catalog to use. If this job control word is not defined, HP ALLBASE/4GL uses the message catalog HP4[R]001 (American) by default.

Multiple HP ALLBASE/4GL Systems

One MPE/iX system can support a number of HP ALLBASE/4GL systems simultaneously, and each HP ALLBASE/4GL system in turn can support a number of users and applications. Typically, you might want to use multiple HP ALLBASE/4GL environments if you are using the same MPE/iX system for developing multiple applications.

If you need to use multiple HP ALLBASE/4GL environments on your MPE/iX system, you don't need to create multiple copies of the entire HP ALLBASE/4GL system. The only parts you need to duplicate are the HP ALLBASE/4GL S-files. More than one HP ALLBASE/4GL developer environment can share the same program files, message catalogs and terminal support files.

Note that the program files and message catalogs are not the same for the developer and run-time environments. A developer environment and a run-time environment cannot share program files or message catalogs. The terminal support files are identical for both the developer environment and the run-time environment.

If you do use more than one set of HP ALLBASE/4GL S-files, they must be in separate groups. The S-file groups can be in the same account, or in different accounts.

When you use multiple S-file sets, the MPE/iX variable HP4SPATH must be set correctly for each user. You will also need to set the HP4DATAPATH variable, the HP4TIPATH variable, and the HP4SQLPATH variable for each user, according to the S-file set being used.

The following table is an example showing the values of the MPE/iX environment variables required to access the two HP ALLBASE/4GL environments. This table assumes you have copied the HP ALLBASE/4GL S-files to the HP4S groups in two accounts called HP4DEVEL and HP4TEST.

User	Variable	Typical Value
Developer	HP4SPATH	HP4S.HP4DEVEL
	HP4DATAPATH	DEVDATA.HP4DEVEL
	HP4SQLPATH	DEVSQL.HP4DEVEL
	HP4TIPATH	DEVTI.HP4DEVEL
Test user	HP4SPATH	HP4S.HP4TEST
	HP4DATAPATH	TESTDATA.HP4TEST
	HP4SQLPATH	TESTSQL.HP4TEST
	HP4TIPATH	TESTTI.HP4TEST

Run-Only Applications

If required, completed applications can be unloaded from the development S-files and loaded into the test environment S-files as run-only applications. This reduces disk usage since run-only applications do not require the developer source information to be present. Unloading applications in run-only form also ensures that they cannot be modified.

Start-up Command File

HP ALLBASE/4GL is supplied with a command file HP4GL (or HP4GLR for the run-time environment) to start HP ALLBASE/4GL from the MPE/iX command interpreter.

This command file allows you to specify a number of options on the command line. These options include the commands for log-on bypass, or customized log on. You can also specify values for the MPE/iX variables used by HP ALLBASE/4GL by entering the values on the command line. Refer to Chapter 2 for details of the log-on bypass facility and the customized log-on screen facility.

The command line to start HP ALLBASE/4GL is:

```
:HP4GL ["options"] [variable=value] ...
```

The *variable* term on this command line allows you to set values for the following MPE/iX variables or job control words used by HP ALLBASE/4GL.

- HP4APPNPATH
- HP4DATAPATH
- HP4DBMPATH
- HP4FSPATH
- HP4SPATH
- HP4SQLPATH
- HP4TERM
- HP4TIPATH
- NLUSERLANG (job control word)
- NLDATALANG (job control word)

If any of these variables or job control words are set when you start HP ALLBASE/4GL, the command file uses the current value for the variable or JCW.

Values specified on the command line only apply for the current HP ALLBASE/4GL session. The existing values (if any) for these variables and job control words are restored when you exit from HP ALLBASE/4GL.

If required, you can use a logon UDC to set values for these variables and job control words.

If the variables and job control words are undefined when you start HP ALLBASE/4GL, the command file assumes the following default values.

Variable	Default Value (Developer)	Default Value (Run-Time)
HP4APPNPATH	HP4APPN	HP4APPNR
HP4DATAPATH	HP4DATA	HP4DATAR
HP4DBMPATH	HP4DBM	HP4DBMR
HP4FSPATH	HP4FS	HP4FSR
HP4SPATH	HP4S	HP4SR
HP4SQLPATH	HP4SQL	HP4SQLR
HP4TERM	HP	HP
HP4TIPATH	HP4TI	HP4TIR
NLUSERLANG	1 (American)	1 (American)
NLDATALANG	1 (American)	1 (American)

These default values correspond to the group structure that is created for the standard HP ALLBASE/4GL installation.

Screen Image Printing

HP ALLBASE/4GL allows you to print an image of a screen by pressing CTRL and P followed by Return while the screen is displayed. The screen printing system uses the MPE/iXUX variable HP4SCREEN_PRINT to determine the destination printer.

Note

You may also need to alter the HP4INV_PRT_CHAR MPE/iX variable. Refer to the description of this variable under "MPE/iX Variables" for details.

HP4SCREEN_PRINT Variable

If the HP4SCREEN_PRINT variable is not defined, HP ALLBASE/4GL prints screen images to device class LP. (The formal designator is HP4REP.)

If HP4SCREEN_PRINT exists as an empty string (that is, ""), HP ALLBASE/4GL attempts to print screen images to a slave printer attached to the user's terminal. The terminal configuration must be correct for slave printing to operate. Refer to Terminal Configurations for more details.

Note

If HP4SCREEN_PRINT is a non-null value, the screen image will not be printed.

The `To System` function key in the screen printing function key set also uses the HP4SCREEN_PRINT environment variable.

The `To Local` function key always attempts to print the screen image to a terminal slave printer.

Hardware and MPE Clock Settings

HP ALLBASE/4GL uses the standard C programming language library routines to determine the time. These routines rely on the system hardware clock (ISL time), rather than the local MPE/iXUX time setting.

HP ALLBASE/4GL assumes the system hardware clock is set to Greenwich Mean Time (GMT) and uses the MPE/iX variable TZ to determine the offset for the local time zone. If the TZ variable is not defined, HP ALLBASE/4GL computes its correct value by obtaining the difference between the values of the hardware clock and the local MPE/iX time setting.

Do not set TZ manually unless you are fully familiar with the way it is specified.

HP ALLBASE/4GL Terminals

HP ALLBASE/4GL runs on most HP TERM0 standard terminals, and supports features such as the HP line drawing character set, touchscreen operation, and color. HP ALLBASE/4GL requires at least the terminal functionality provided by the HP 2622 terminal.

HP ALLBASE/4GL uses a file known as a terminal support file (a *termdata* file) containing the information necessary to drive the terminal. HP ALLBASE/4GL uses the value of the HP4TERM variable as the name of the terminal support file to retrieve.

If the HP4TERM variable is not set, HP ALLBASE/4GL assumes minimal terminal capability equivalent to an HP 2622 terminal.

Terminal Support Files

The following terminal support files are supplied with HP ALLBASE/4GL:

Table C-5. Terminal Support Files

hp	hp2392t	hp2397at	hp2625
hpcl	hp2392a	hp2622	hp2626
hpclt	hp2392at	hp2622a	hp2626a
hpl	hp2393	hp2622p	hp2626p
hplt	hp2393a	hp2623	hp2627
hPT	hp2394	hp2623a	hp2627a
hp150	hp2394a	hp2623p	hp2627p
hp2382	hp2397	hp2624	hp2628
hp2382a	hp2397t	hp2624a	hp70092
hp2392	hp2397a	hp2624p	hp70094

These files are located in the HP4TERM.SYS group and account.

HP ALLBASE/4GL uses the value of the HP4TERM variable as the name of the appropriate terminal support file.

If you want to use a terminal that does not appear in this list, set the HP4TERM variable to one of the values shown in the following table.

File Name	Terminal Type
hp	Basic HP terminal
hpcl	HP terminal with color and line drawing character set
hpclt	HP terminal with color, line drawing character set, and touchscreen operation
hpl	HP terminal with line drawing character set
hplt	HP terminal with line drawing character set and touchscreen operation
hPT	HP terminal with touchscreen operation

Touchscreen Terminals

If your terminal supports touchscreen operation, set the HP4TERM variable to one of the options with a "t" in their suffix. Touchscreen operation is available for all HP 150 terminals.

Terminal Initialization and Resetting

When HP ALLBASE/4GL starts up or returns from a temporary exit, it sets the terminal into a mode compatible with the MPE/iX format mode. HP ALLBASE/4GL resets the terminal to its initial state whenever it temporarily exits via an EXTERNAL *REFRESH call, when invoking a temporary MPE/iX command interpreter, or when calling any other products such as HP ALLBASE/QUERY or HP ISQL.

HP ALLBASE/4GL makes extensive use of terminal tabstops to maximize the efficiency of terminal output. It initializes the terminal tabstop settings by copying the file TABSET.HP4TERM.SYS to the terminal. This file contains the escape sequences necessary to clear any current settings and make the appropriate new settings. Do not delete or rename the TABSET file.

Terminal Configurations

HP ALLBASE/4GL supports the HP Roman8 extended character set. To use this character set, your terminal must be in 8-bit ASCII mode.

For HP 150 and HP2394 terminals, an additional parameter, Tab = Spaces, must be set to NO.

If you wish to print HP ALLBASE/4GL screens, you may also need to alter the HP4INV_PRT_CHAR variable to a printable ASCII character. In some circumstances, the default value of DEL causes unreliable printing.

To ensure reliable operation of a slave printer with an HP terminal, you must use the correct terminal configurations.

The following tables show the suggested configuration for an HP 700/92 or an HP 2392 terminal.

Datacomm Configuration

Baudrate	9600
EnqAck	NO
Chk Parity	NO
RecvPace	Xon/Xoff
XmitPace	Xon/Xoff
Parity/DataBits	None/8
Asterisk	OFF
SR(CH)	LO
CS(CB)Xmit	NO

External Device Configuration

BaudRate	9600
PrinterNulls	000
SRRXmit	NO
SRRInvert	NO
Parity/DataBits	None/8

PrinterType	ROMAN8
XmitPace	Xon/Xoff
CS(CB)Xmit	NO

Terminal Configuration

Datacomm/ExtDev	PORT1/PORT2
Terminal Id	2392A
LocalEcho	OFF
Start Col	01
XmitFnctn(A)	YES
InhEolWrp(C)	NO
InhHndShk(G)	NO
Esc Xfer(N)	YES
FldSeparator	U/S
ReturnDef	C/R
Tab Spaces	No
Keyboard	USASCII
Language	ENGLISH
CapsLock	OFF
Bell	ON
SPOW(B)	NO
Line/Page(D)	LINE
Inh DC2(H)	NO
BlkTerminator	R/S
TermMode	HP

D

HP ALLBASE/SQL Database Environments

This appendix provides an overview of the requirements for HP ALLBASE/SQL database environments for use with HP ALLBASE/4GL applications. Refer to the *HP ALLBASE/SQL Database Administration Guide* and the *HP ALLBASE/SQL Reference Manual* for details of the procedures for creating and configuring HP ALLBASE/SQL database environments.

Database Creation

HP ALLBASE/4GL cannot create database environments directly. You must create new database environments with the HP ISQL START DBE NEW command.

The MPE/iX system user who creates a database environment automatically becomes the administrator for the database.

The database environment for an application must exist before an application can be developed. The database environment for an application must also exist before you attempt to load an application into an HP ALLBASE/4GL system using the application loading utility.

Database Environment Name and Location

An HP ALLBASE/4GL application can access a database environment anywhere in the MPE/iX file system.

HP ALLBASE/SQL uses a DBECon file to identify the name and location of a database environment. The application definition screen in the HP ALLBASE/4GL administrator application contains a field that allows you to specify the name of the DBECon file for the database environment for an application.

HP ALLBASE/4GL uses an MPE/iX variable HP4SQLPATH to determine the location of the DBECon file.

Unless you specify a fully qualified name for the DBEcon file (that is, a name in the form *FILE.GROUP.ACCOUNT*), HP ALLBASE/4GL appends the current value of the HP4SQLPATH variable to the name you enter in the the DBECon file field to determine the name of the file. If HP4SQLPATH is not defined, HP ALLBASE/4GL searches for the DBECon file in the user's current logon group and account.

Application Unloading and Loading

When an application is unloaded from the HP ALLBASE/4GL developer environment, the name of the database environment used in the developer environment is included in the application definition record. This name is written into the destination system during the application loading procedure.

During the application loading procedure, the loading utility attempts to connect to the database environment specified in the application definition record. If this database does not exist, HP ALLBASE/4GL displays a message asking you to enter the name of a database environment for the application. If you enter the name of a database environment that is not the same as the database environment shown on the application definition screen, HP ALLBASE/4GL amends the application definition screen automatically at the conclusion of the loading procedure.

SQL Owner Group

In the developer environment, the system administrator can specify the name of an SQL owner group for an application.

HP ALLBASE/4GL automatically transfers ownership of all tables and database modules created from HP ALLBASE/4GL to this owner group. The SQL owner group name for an application must not be changed after development of the application commences. The SQL owner group name for an application cannot be changed in the HP ALLBASE/4GL run-time environment.

User Access

All HP ALLBASE/4GL user access to HP ALLBASE/SQL databases is controlled by the security provisions of HP ALLBASE/SQL, and is determined by the user's MPE/iX logon name. This logon name may not be the same as the user's HP ALLBASE/4GL name.

The type of user access required for database users depends on the security requirements of the applications you are using. The access requirements for the various HP ALLBASE/4GL user types are summarized in the following paragraphs.

System Administrator

The HP ALLBASE/4GL system administrator must be the database creator, or have database administrator authority (dba) for an application database.

Developer Users

Developer users must have connect authority and resource authority for an application database. Without resource authority, developers cannot create tables or modules in the database environment.

Developer users (as determined by the developer's MPE/iX login name rather than the developer's HP ALLBASE/4GL user name) must be members of the SQL owner group for the application.

Application End Users

All application end users require connect authority for the application database.

All application end users must have run authority for the module for the applications or versions they use. The module name is *owner_group.name* where *owner_group* is the SQL owner group for the application, and *name* is the name of the application or version.

Application end users should not be members of the SQL owner group for the application. If they are members of this group, they will have authority to create, delete, or modify database tables and modules.

Database Connect and Release

HP ALLBASE/4GL connects to, and releases from, the application database environment automatically.

In the developer environment, HP ALLBASE/4GL connects to the application database environment when a developer creates a table, deletes a table, generates a select list, or generates an SQL logic block.

HP ALLBASE/4GL also connects to the application database in application testing mode when the user executes a command that requires database access.

Once HP ALLBASE/4GL has connected to the application database, the connection is maintained for the duration of the HP ALLBASE/4GL session.

In the run-time environment, HP ALLBASE/4GL connects to an application database automatically when the user executes a command that requires database access. HP ALLBASE/4GL then retains the connection to the database for the duration of the HP ALLBASE/4GL session.

Multi-User Databases

While an application is under development, the database environment for the application should be configured as a multi-user database.

When a developer creates a table or generates an SQL logic block, HP ALLBASE/4GL connects to the database environment. This database connection is then maintained for the duration of the HP ALLBASE/4GL session. If the developer uses the application testing option, HP ALLBASE/4GL attempts to connect to the database a second time. This generates an error condition if the database is configured as a single user database.

If required in the run-time environment, HP ALLBASE/4GL applications can use single-user databases.

Module Installation

While an application is under development, HP ALLBASE/4GL creates a number of executable sections for the application, and stores these sections in a database module in the database. HP ALLBASE/4GL also stores the module definition in a file *NAME* in the group and account identified by the HP4DBMPATH variable, and *NAME* is the name of the application or version.

During the application loading process, HP ALLBASE/4GL connects to the database environment for the application and installs the module for the application. During the application loading procedure, the database module file or files for the application, and any versions of the application, must be present in the group and account identified by the HP4DBMPATH variable.

HP ALLBASE/4GL attempts to connect to the database environment specified in the application definition record. If this database environment does not exist, HP ALLBASE/4GL displays a message asking you to specify the name of a database environment. (You can enter / in response to this message if you want to complete the loading process without installing the database module.)

Table Creation

Application developers can create base tables directly from HP ALLBASE/4GL using the *developr* file/SQL table creation screen.

HP ALLBASE/4GL can also create base tables during the application loading process. The module file for an application (or version) contains the definition of the tables defined in the application version. When HP ALLBASE/4GL installs the module, it also attempts to create the base tables for the application. Any existing tables in the database environment are not affected by this process.

Using an Existing Database

Application developers can create HP ALLBASE/4GL applications to access existing databases.

To access existing tables, the developer can define select lists using HP ALLBASE/4GL field specification and column definitions as required. The developer can then use a SELECT command in an SQL logic block to access the required table. Refer to the *HP ALLBASE/4GL Developer Reference Manual* for more information about these facilities.

Alternatively, the developer can define (but not create) a table using the *developr* file/SQL table definition screen. The HP ALLBASE/4GL definition of the table must have the same name as the existing table and use column names that match the columns of the existing table.

E

Using HP TurboIMAGE/iX Databases

This appendix describes the requirements for establishing an HP TurboIMAGE/iX database for use with HP ALLBASE/4GL applications. It does not describe specific HP TurboIMAGE/iX creation or administration procedures; refer to the *HP TurboIMAGE/iX Database Management System Reference Manual* for these instructions.

Database Names and Locations

Within HP ALLBASE/4GL, you must use a valid HP ALLBASE/4GL name for each database. You define this name on the database definition screen, where you also identify the external name of the HP TurboIMAGE/iX database (the name of the database root file).

HP ALLBASE/4GL uses the HP4TIPATH system variable to identify the default account and group of each HP TurboIMAGE/iX database.

You may specify a fully qualified name for the external database name on the database definition screen (that is, a name in the form *FILE.GROUP.ACCOUNT*). If you don't use a fully qualified name, HP ALLBASE/4GL uses the current value of the HP4TIPATH variable to search for the database at run- time. If HP4TIPATH is not defined, HP ALLBASE/4GL searches for the database in the user's current logon group and account.

An HP ALLBASE/4GL application can access multiple HP TurboIMAGE/iX databases, anywhere in the MPE/iX file system. You may place these databases in the group and account defined by the HP4TIPATH system variable. For any databases that are not placed in this group and account, you

must specify the fully qualified name of the database when you define it in HP ALLBASE/4GL.

An application must be granted access to an HP TurboIMAGE/iX database before it can access the databse. You specify access to each HP TurboIMAGE/iX database for an application on the parameters for database access screen. On this screen you must also specify the user class password that the application uses to access the database For more information about granting an application access to a database, refer to Chapter 4.

Using an Existing Database

Commonly, application developers will create HP ALLBASE/4GL applications to access existing HP TurboIMAGE/iX databases. Developers can load the definitions of the HP TurboIMAGE/iX data sets and data items into HP ALLBASE/4GL to avoid redefining these items in the HP ALLBASE/4GL application. To load the HP TurboIMAGE/iX schema file information into the HP ALLBASE/4GL application system files (S-files), HP ALLBASE/4GL provides several upload utilities. These upload utilities can also be used to load administrator database definitions.

Upload Utilities

The *HP4TUPLD* utility converts information about data items, data entries and data sets contained in an HP TurboIMAGE/iX schema to HP ALLBASE/4GL field specifications, record layouts and data set definitions. The converted data can be printed to the screen or redirected to a file.

The *HP4TUPLD* utility can also be used to convert database definition information, which can be used to define databases within the HP ALLBASE/4GL administrator application.

The output from *HP4TUPLD* can be easily added to the HP ALLBASE/4GL S-files using a utility called *HP4ATOS*.

When you run *HP4ATOS*, these items are added to the S-files for the application. During this procedure, any clashes between existing HP ALLBASE/4GL names and HP TurboIMAGE/iX names are resolved, and HP

TurboIMAGE/iX characters that are illegal in HP ALLBASE/4GL names will be converted.

For more information about using *HP4TUPLD*, refer to the HP TurboIMAGE/iX Interface section of the *HP HP ALLBASE/4GL Developer Reference Manual*. For information about using the *HP4ATOS* utility, refer to the Utilities section of the *HP ALLBASE/4GL Developer Reference Manual*.

Database Creation

HP ALLBASE/4GL cannot create HP TurboIMAGE/iX databases directly. Refer to the *HP TurboIMAGE/iX Database Management System Reference Manual* for details about creating an HP TurboIMAGE/iX database.

Application Loading and Unloading

When an application is unloaded from the HP ALLBASE/4GL developer environment, the name and user class password of each database used in the developer environment is included in the application definition record. This data is written into the destination system during the application loading procedure.

When this application is loaded into the destination HP ALLBASE/4GL developer environment, the database definitions and database access parameters are loaded. If you are using a different external database, you will need to redefine the external name of the HP TurboIMAGE/iX database in HP HP ALLBASE/4GL.

HP TurboIMAGE/iX Database Access

HP ALLBASE/4GL accesses HP TurboIMAGE/iX using the user class password defined on the parameters for database access screen. This password defines the access permissions of **all** developers and end users of the application for the particular database.

In addition to the user class for an application, developers may specify further read and write access restrictions during development. Each call to an HP TurboIMAGE/iX database specifies the mode in which HP TurboIMAGE/iX data is accessed and each mode specifies certain read and write permissions.

Careful thought in implementing HP ALLBASE/4GL security and in application development can prevent unauthorised users from accessing parts of, or all of, an HP TurboIMAGE/iX database.

Opening and Closing Databases

HP TurboIMAGE/iX databases are automatically opened when a data set within the database is accessed. Databases are opened with the HP TurboIMAGE/iX database password that is specified by the HP ALLBASE/4GL administrator within the administrator application. This password identifies the read and write access available to all end users and developers of the application.

HP TurboIMAGE/iX databases are only closed at the end of an HP ALLBASE/4GL session or when an explicit DM IMAGE *CLOSE logic command is executed.

Glossary

This glossary explains the meaning of terms and words used in HP ALLBASE/4GL. In some cases, the terms used in HP ALLBASE/4GL may differ in meaning from the same terms used in a conventional programming environment.

A

administ. The name of the administrator application. It is a reserved application name. It is also the user name reserved for the system administrator.

Administrator. The person who controls the HP ALLBASE/4GL site configuration and controls access by developers and users.

Administrator application. The HP ALLBASE/4GL application used by the system administrator to control the system-wide site configuration.

***ALL.** A special HP ALLBASE/4GL user name to allow all system users access to an application or version.

Application. A computer solution designed to suit a specific purpose, also known as a program. An HP ALLBASE/4GL application is a program written in HP ALLBASE/4GL which is executed using the HP ALLBASE/4GL run-time or developer environment.

Archive. A mode of operation for HP ALLBASE/SQL databases. In archive mode, HP ALLBASE/SQL maintains a permanent log of all database transactions in a log file (or two log files if dual logging is enabled). The database log files can be used in conjunction with a backup copy of the database to recover lost data with the STARTDBE RECOVER command.

B

Base application. An application that is used as a base for one or more versions. The base application can be used without the versions, but the versions of a base application cannot be used unless the base application is present on the same HP ALLBASE/4GL system.

C

Case. A typographical term used to distinguish uppercase (capital letters) and lowercase characters. HP ALLBASE/4GL is case sensitive with respect to user names, application and version names, and passwords.

Commit. The HP ALLBASE/4GL term for the action that terminates the processing of a field or screen and stores the user's input.

Communication area field. A field maintained by both the application and HP ALLBASE/4GL itself. Communication area fields may be either alterable or read only.

D

Database. A central storage mechanism for computer data. HP ALLBASE/4GL applications can access data stored in HP ALLBASE/SQL databases and HP TurboIMAGE/iX databases.

Data file. File used to hold data for an application. HP ALLBASE/4GL uses KSAM data files or serial data files.

Data set. A collection of data entries, or records, within an HP TurboIMAGE/iX database.

Data screen. A screen on which the user can enter data, and on which the system displays information. HP ALLBASE/4GL data screens can contain a scrolling area and/or a window.

Date format. Each HP ALLBASE/4GL site has one date format (specified by the system administrator) that applies to all developers and users. The format is either the US date format MM/DD/YY, or the European date format DD/MM/YY. Regardless of the date format, HP ALLBASE/4GL stores all dates internally in the format YY/MM/DD. The chosen system-wide data format controls the presentation of dates on screens and reports.

Default application. An application or version whose name always appears in the *Application or Version* field on the HP ALLBASE/4GL sign-on

screen when a particular user signs on to HP ALLBASE/4GL. The user can type over the default to run a different application if required. The end user definition screen contains a field that allows you to enter a default application or version name for a user.

Developer. A person who uses the developer application to develop end-user applications.

Development security code. An auxiliary password that enables developers to protect individual item specifications against unauthorized modification. A development security code can be set by the system administrator for each application. A developer signing on to the application under the security code can then secure items in the application. Secured items can only be changed by developers who have signed on using the correct development security code.

developr. The name of the developer application. It is a reserved name and cannot be used for other purposes.

Dictionary. The part of an HP ALLBASE/4GL application that contains definitions such as field specifications and the names of application components such as variables. The application developer uses the facilities in the dictionary menu of the HP ALLBASE/4GL developer to define dictionary entries.

E

Edit code. A code assigned to a field specification, a screen field, or a report field that defines the type of data stored or displayed in the field. Refer to the *HP ALLBASE/4GL Developer Reference Manual* for an explanation of the HP ALLBASE/4GL edit codes.

Enable/disable. To make active (or inactive).

End user. A person who uses HP ALLBASE/4GL to run an application or a version.

F

Field specification. A dictionary entry that defines the editing and data validation characteristics of a field.

Function. An HP ALLBASE/4GL logic entity. A function is similar to a subroutine in a conventional language system. It consists of between 1 and 99 logic commands.

G

Generate. To validate and transform HP ALLBASE/4GL source parameters into an executable format. An application must be generated before it can be used. HP ALLBASE/4GL contains facilities to generate individual components or entire applications.

H

HP ALLBASE/QUERY. HP ALLBASE/QUERY is an easy-to- use terminal based interface to databases that allows users to formulate queries and print reports about database records. It also allows users to update databases.

HP ALLBASE/SQL. A relational database management system which operates on both the HP-UX and MPE/iX operating systems.

HP TurboIMAGE/iX. A network database management system which operates on the MPE iX operating system.

I

Initial action. The first action executed in an HP ALLBASE/4GL application. This action can be a menu or a process. The name and type of the initial action for an application is defined in the development administration environment.

ISQL. ISQL is an abbreviation for "interactive structured query language." The ISQL program allows you to create, configure and access HP ALLBASE/SQL databases interactively. Refer to the *ISQL Reference Manual* for more information.

J

Justification. Alignment of data within its boundaries. HP ALLBASE/4GL provides justification of data within the left and right boundaries of the field. A field can be specified such that it is justified on the first character position (left justified), the last character position (right justified), centered within the field, or not justified at all.

K

KSAM. This is a data file management system, used by HP ALLBASE/4GL. It is an abbreviation for "keyed sequential access method". An HP ALLBASE/4GL KSAM file consists of three MPE iX files with the suffixes *D*, *K*, and *S*. The *D* suffix file contains the actual data records, and the *K* suffix file is the index to the data records. The *S* suffix file contains information about the structure of the file records and the index.

L

Load/unload. The HP ALLBASE/4GL utilities used when transporting an application to another site. The unload utility copies the application into a single file, and the load utility transfers the application copy from that file into the HP ALLBASE/4GL environment at the destination site.

Logic block. The series of commands that make up an HP ALLBASE/4GL process or function. Each logic block contains from 1 to 99 lines of logic commands.

Logic command. The HP ALLBASE/4GL commands a developer uses to manipulate an application's data and control its logic flow.

M

Master title. A literal defined under a master title name by the system administrator. The master title can be referenced by name by developers for use in applications to ensure consistency of items such as company names, report titles, and so on.

Menu. A type of screen that allows the user to choose from a number of options using the terminal keyboard (or a touchscreen terminal). Pressing the Return key or the `Activate Item` function key activates the selected item.

Menu item security. The system administrator can choose to apply menu item security to any items on the application menus. The security consists of a list of authorized users for each secured item. To activate a secured menu item, a user must be listed as an authorized user for that item.

Message. An information message, query, error, or warning displayed on an application screen. HP ALLBASE/4GL displays all messages on lines

23 and 24 of the screen. The user must acknowledge query messages by entering a reply and pressing Return.

Module. A group of commands stored in an HP ALLBASE/SQL database. The module for an HP ALLBASE/4GL application contains information that HP ALLBASE/SQL needs to execute the commands required for the application. The module must be installed in the database environment before the application can be used. All application users must have run authority for the module.

MPE iX. The operating system for the HP 3000 series 900 computers.

MPE iX environment. The system environment under which HP ALLBASE/4GL operates. It includes peripheral devices, the data storage devices, and the file management system.

MPE iX variables. Variables set in the MPE iX environment and used by HP ALLBASE/4GL to determine the locations of the files used by HP ALLBASE/4GL.

N

name recall. Context-sensitive recall facility that allows developers to scroll through the names of items that are defined for the *field type* (the item type expected in the active field) .

O

(no entry)

P

Pad character. A character used to fill a field. Typically a space or a zero.

Process. An HP ALLBASE/4GL logic entity. A process is similar to a program in a conventional language system. It consists of between 1 and 99 logic commands.

Q

(no entry)

R

Range. A validation range specifying the lower and upper limits for the contents of a field.

Reserved names. HP ALLBASE/4GL has six reserved names. All six are contained in the developer system. The runtime environment does not contain the *HPLIBnnn* and *ULIBnnn* reserved applications.

HPLIBnnn and *ULIBnnn* (where nnn is the three-digit language identifier) are the names of applications that contain module builder templates.

The following names are reserved in both the developer and runtime environments: *administ* is the name of the administrator application; *developr* is the name of the developer application; *HPlogo* is the name of an application used to contain customized sign-on screen windows; and *hpqm* is a user name to be used to gain direct access to HP ALLBASE/QUERY, if it exists on the system.

Run-time environment. A special version of HP ALLBASE/4GL. It contains only those parts of HP ALLBASE/4GL that are required to run completed end user applications and the necessary system administration facilities.

S

Source code. The information entered by the application developer while an application is being developed. In HP ALLBASE/4GL, the developer's source code is converted to an executable form in a procedure called generation. The developer's source code does not need to be present to run an application in the HP ALLBASE/4GL run-time environment.

SQL. SQL is an abbreviation for "structured query language". HP ALLBASE/SQL uses the industry standard structured query language to access and update data stored in HP ALLBASE/SQL databases used by HP ALLBASE/4GL.

SQLUTIL. HP ALLBASE/SQL utility program. This program allows you to perform various maintenance and utility functions on HP ALLBASE/SQL databases. Refer to the *HP ALLBASE/SQL Database Administration Guide* for more information.

Synonyms. The system administrator can establish synonyms for logic command names and communication area names. Developer users can use the synonyms in place of the standard HP ALLBASE/4GL names. Synonyms are valid only for the site for which they have been defined.

System Administrator. The person who administers the HP ALLBASE/4GL site configuration and controls access by users.

System files. The HP ALLBASE/4GL system files are sets of files containing the definitions of any installed applications. These files are referred to as the HP ALLBASE/4GL S-files. They operate in conjunction with a set of HP ALLBASE/4GL program files.

T

termdata. A database describing terminals, based on the standard MPE iX terminfo database. Hewlett Packard programs that use termdata information include HP ALLBASE/QUERY and HP ALLBASE/4GL. See also: Terminfo.

terminfo. A database describing terminals. Terminals are described in terminfo by giving a set of capabilities that they have, and by describing how operations are performed. Many MPE iX programs that interact with a terminal use terminfo information.

Training mode. HP ALLBASE/4GL operating mode that enables users to execute all parts of an application without being able to change or update the application's data files. This allows end users to familiarize themselves with an application without worrying about inadvertently corrupting the data files. Training mode can be invoked for individual users either by the system administrator or by the users themselves. A user can enter training mode by pressing a function key and can then exit the mode with another function key. If training mode is invoked by the system administrator it can only be cancelled by the system administrator.

U

Unload/load. The HP ALLBASE/4GL utilities used when transporting an application to another site. The unload utility copies the application into a single file, and the load facility transfers the application copy from this file into the HP ALLBASE/4GL system at the destination site.

V

Version. A set of additional parameters that operate in conjunction with an HP ALLBASE/4GL application to modify the application to suit the needs of a particular end user or group of end users. A version cannot exist unless the base application also exists on the same HP ALLBASE/4GL system.

W

Window. HP ALLBASE/4GL screen that is overlaid on the current screen starting at the line number defined for the current screen. Window screens operate exactly as normal data screens. However, they may not contain windows or scroll areas. Window screens cannot be displayed independently of a normal data screen.

X

(no entry)

Y

(no entry)

Z

(no entry)

FINAL TRIM SIZE : 7.0 in x 8.5 in

Index

G

H

I

J

K

L

M

N

T

U

V

W

FINAL TRIM SIZE : 7.0 in x 8.5 in