tableBASE

Library Bridge

Release 5.B

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Table of Contents

2 - Installation Overview 9

3 - Installing the Library Bridge 17

4 - Library Conversion Utilities 27

Preface

Library Bridge (tableBASE 5.B) facilitates the migration of applications to tableBASE 6.0.2.

This guide describes the components, features and installation of the Library Bridge. Chapter 1 provides guidance to achieve the migration to Version 6 of tableBASE without the risk of applications unavailability throughout the process. Chapter 2 provides an overview of the Library Bridge installation, and Chapter 3 provides installation details. Chapter 4 covers the new conversion utilities. Appendix A provides information on tableBASE parameters to assist with the installation process. Appendix B is designed for customers who have already begun to migrate libraries using utilities provided in tableBASE 6.0.1. Appendix C lists all the datasets included with the installation package. Appendix D lists new and revised return codes for the Library Bridge.

Audience

This guide is intended for individuals responsible for the migration of the applications incorporating tableBASE from Version 5 to Version 6.

A working knowledge of MVS JCL procedures is required to perform the tasks detailed in this guide. The person charged with the migration should be familiar with the tableBASE concepts and facilities, and the MVS environment.

Why Migration to Version 6 is Important

The fundamental difference of Version 6 from all earlier versions is that the engine is re-architected to be fully re-entrant and to exploit the many new facilities of z/OS now and in the future. This milestone was a necessary requirement to allow customers to benefit from tableBASE when access is from multi-tasking environments such as stored procedures in DB2, Websphere in USS, IMS, CICS and Multi-tasking Batch.

This new engine is also the necessary foundation to support the new Virtual Table Share Table Space Region (VTS-TSR), a shared memory feature that provides ultra high performing read-write access to tables from any region. This further milestone of Version 6, enables great reductions in use of memory, especially for IMS and CICS Transaction Server. An additional benefit of VTS-TSR is the removal of transaction affinities for applications using tableBASE in a CICS AOR environment.

In addition to support for the On Demand features of z/OS, with the new multi-tasking engine, and the ability to reduce memory usage with VTS-TSR, performance was not forgotten. Support for OTE reduces CPU usage in CICS. Internal locking has been improved to further improve performance. Improved algorithms speed up searches for tables, and for rows within tables. An overall reduction in path lengths for many operations has made the performance of the VTS-TSR indistinguishable from the local TSR performance of prior releases. For a complete list of Version 6 enhancements from Releases 6.0.0 through 6.0.2 see the Release notes of the accompanying tableBASE Release 6.0.2.

In summary, it is prudent to migrate to Version 6 as soon as practical. Version 6 is architected to embrace many internal enhancements that will continue to provide benefits in performance, management of resources, improved diagnostics and abend recovery as future releases of Version 6 become available. And the most significant aspect of these future releases is that minimal changes, if any, are required to the applications or the JCL procedures that invoke them to benefit from the future releases of Version 6.

Why the Library Bridge?

Many IT departments have been using tableBASE for a long time, and as a consequence many applications within an organization benefit from the technology. In addition, most organizations have multiple table libraries that satisfy the table data requirement for these applications.

Over the years, there have been several improvements in VSAM access technology as well as technological advances such as stored procedures in DB2. In addition, there is an increasing need to upgrade mainframe applications for web based transactions.

Version 6 was built to utilize the technological improvements as well as accommodate the changing IT processes resulting from these technological advances. As IT departments start to embrace these changes a migration to Version 6 of tableBASE will become inevitable.

Some organizations have thousands of tables, contained in many tableBASE libraries. The scope of the content of these libraries often span several departments. In addition, some organizations have hundreds if not thousands of executables using tableBASE. With this environment in mind, the Library Bridge was designed to facilitate the gradual migration to Version 6.

How does the Library Bridge address the Migration Challenge?

The Library Bridge allows applications written with tableBASE Version 5, to migrate in a planned fashion to the new release. Prior to this option, customers were required to convert their tableBASE libraries to Release 6 format before any applications could exploit the new features of Release 6. For organizations with many applications the migration process could not be executed and tested easily in a fixed time window.

The Library Bridge allows both Version 5 applications and Version 6 applications to share the same tables simultaneously from a single library called the Bridge Library. There is no need to keep release dependent libraries synchronized. By using Bridge libraries the migration to release 6 can be spread over an extended time frame and the migration is easily scheduled and tested in stages.

Thus new features and improved performance can be exploited and measured on an application by application basis, in a step wise fashion.

Conventions Used in this Guide

This guide uses conventions to differentiate code and typed commands, and to display the names of parameters (see Table 1-1).

Table 1-1: Document Conventions

Convention	Description
`code examples and commands`	Appear in a fixed font.
MAXNMTAB	Names of parameters appear in upper case simply for ease of reading; actual case used is upper or lower or a mixture.
Version	Following the IBM standards, version refers to a program that has significant new code or new functionality. Version is a more general term than release. For example, Version 6 includes Release 6.1 and 6.2, and is equivalent to Release 6.x.
Release	Following the IBM standards, release refers to a specific program. For example, Release 6.0 is a term that is used to identify the first release of Version 6, and does not necessarily include other software releases published under Version 6, such as Release 6.1.

Additional tableBASE References

This guide is one of several that describe tableBASE; others include:

- Release Notes
- tableBASE Administrators Guide
- tableBASE Installation Guide
- tableBASE Concepts and Facilities
- tableBASE Programming Guide
- tableBASE Batch Utilities Guide

- tablesONLINE/CICS User's Guide
- tablesONLINE/ISPF User's Guide
- Quick Reference Guide

Customer Support

Note: If technical support is required while using the Library Bridge, please indicate what release of Version 5 (5.0.2 or 5.1) and of VTS are being used with the Library Bridge.

Telephone Hotline

tableBASE customers with a maintenance agreement obtain support by calling the 24-hour hotline-support telephone number **613-523-5588**. The maintenance agreement lists the guaranteed response times for each problem severity level.

Data Kinetics Ltd. strives for the highest quality customer support, providing almost immediate response times for support calls to the 24-hour hotline support telephone number during normal business hours, which are Monday-Friday, 8:00 a.m.-5:00 p.m. EST, and usually within one hour during off-business hours.

For less urgent requests, tableBASE customer support staff can be contacted by facsimile at 613-523-5533, or by email at tablebase@dkl.com.

Before Contacting Technical Support

We will be better able to serve you if you have the following information available when you contact us:

1. Your name, telephone number, and the name of your organization. The name and telephone number of your tableBASE administrator is also helpful.

2. Identify the tableBASE release level and the operating system in use (including the appropriate release identifier).

Note: The tableBASE release number can be identified by using the BN command in TBDRIVER or by printing a report in TBEXEC (the release number is included in the report). tablesONLINE/CICS also displays the release number in the top line of its main screen.

3. Provide a short description of the events that led up to the problem, including the exact number and text of any error messages and/or ABEND codes that are displayed. These messages and codes will be found in the JES Job log for the region in which tableBASE is running.

If there was an ABEND, the summary dump information (PSW, module offset, and register contents) from the job's JES log, and dump dataset contents (if any) will help with the problem diagnosis.

Internet

Our corporate Web site at www.dkl.com contains a customer section to provide information on frequently asked questions (FAQs), upcoming releases, and other information that will be of use to our customers.

A username and password are needed to access some of these features. Please consult your administrator or tableBASE customer support for this information.

Consulting Services

Data Kinetics Ltd. also provides on-site consulting for clients who have development needs. Our highly skilled specialists can be on-site within 24 hours in emergency situations.

tableBASE Training

tableBASE training is available through instructor-led workshops, computer-based training on CD-ROM, and Web-based training. The instructor-led training offers the advantages of customized training, while the CBT and Web-based training formats offer the flexibility of anytime, anywhere training.

Instructor-led

Minimal Maintenance Program Design

This is a one-day seminar providing an intensive introduction to table management using table-driven techniques for designing and coding minimal maintenance application systems. It is intended for systems analysts and programmers responsible for the development and maintenance of application systems.

tablesONLINE Administration

A one day workshop covering the administrative support functions relevant to the effective use of tablesONLINE (TBOL) in a CICS environment. The workshop is tailored to your specific environment and needs.

Instructor-led tableBASE Workshop

This three-day workshop teaches students the various tableBASE facilities for accessing and updating tables in batch and online environments. Students gain hands-on experience with tableBASE by coding programmed solutions to workshop problems. In addition, they are encouraged to bring examples of real world problems to the class for analysis.

Some table-driven programming techniques are introduced, and students learn where to use tables for improving operational efficiency of their programs and for reducing maintenance requirements.

Computer-based Training

Application Designer's and Developers Course is a CBT version of our instructor-led course. This CBT is delivered on CD-ROM and is free to all customers under a tableBASE maintenance agreement.

1 Migrating from Version 5 to Version 6

Components of the Library Bridge

The Library Bridge consists of two components:

- A utility program, DK1TCNV, to convert Version 5 libraries into Bridge or Version 6 libraries.
- Library Bridge code to enable Version 5 of tableBASE to operate with Bridge Libraries. (Release 6.0.2 of tableBASE also operates with Bridge Libraries.)

Library Bridge Code

The Library Bridge code includes the following tableBASE 5.1/5.2 PTFs:

1. P510-038. VTS does not correctly calculate the VTS TD table pivot.
2. P510-039. Row length incorrect under VTS.
3. P510-040. Error in date-sensitive processing date under VTS.
4. P510-047. VTS Server gets Abend code 91 for VSAM Library with DISP=OLD.
5. P510-054. U1099/U1005 when TBEXEC called as a subprogram.
6. P510-055. Enqueues with Paged Tables are not properly released.
7. P510-060. TBEXEC "STOP RUN" must be GOBACK under LE.
8. P510-062. Incorrect message "ALESERV DELETE FAILED" given if VTS "DSPSERV CREATE" failed.

9. P510-083. VTS not processing empty directory blocks correctly. (VTS OA,N*)

10. P510-085. CICS generates G090 when large number of tables and Strobe activated. Strobe count not properly reset.

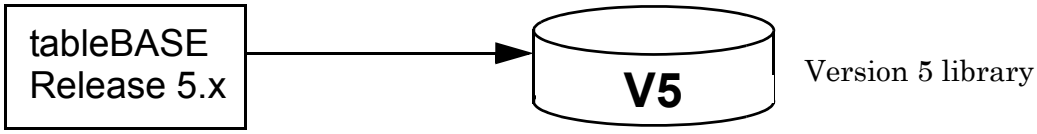
11. P520-004. CA should not allow the base and alternate table to have the same table name.

12. P520-005. VTS VX command didn't delete program after executing.

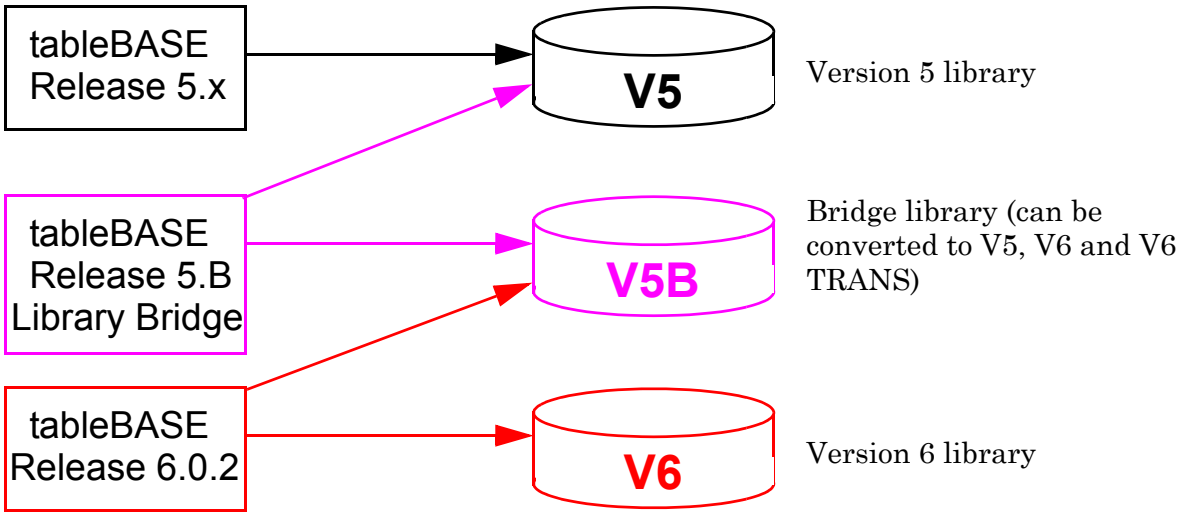
13. P520-006. VTS Message TBV0044 changed from to S from I to force abend.

Overview of Migration Steps

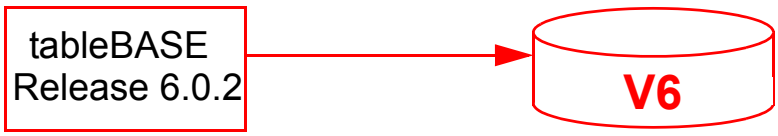
Before Migration



During Migration



After Migration



Description of tableBASE Library Versions

With the introduction of tableBASE Version 6 and Library Bridge, there are now a number of types of tableBASE libraries. The attributes of each are highlighted below:

Version 5 Libraries

- Created with tableBASE Version 5 (including Library Bridge tableBASE 5.B)
- Can be converted to Bridge or Version 6 libraries
- Can be accessed by tableBASE Version 5.x and Library Bridge
- 3120 Block Size, Version 5 directory structure, indexes are stored on the library, hash tables may be true or indexed, paged tables supported

Bridge Libraries

- Converted from Version 5 libraries via the Library Bridge conversion utility
- Can be converted back to Version 5 libraries
- Can be converted to Version 6 libraries
- Can be accessed by Library Bridge, and tableBASE Version 6.0.2 (or later)
- 3120 Block Size, V6 directory structure, indexes are stored on the library, no paged tables
- Can *NOT* be accessed by any tableBASE 5.x releases prior to Release 5.B

Note: All releases of tableBASE 6.0.x will continue to provide support for Bridge libraries. However, DKL cannot guarantee support in future releases of tableBASE beyond 6.0.x (e.g. tableBASE 6.1.x). Any modifications or improvements required to the libraries will only be made to the Version 6 libraries.

Version 6 Transition Libraries

- Created by converting tableBASE libraries using the CVLB526B and CVLB526V procedures with tableBASE 6.0.1. For more information on migrating these libraries see “Appendix B: tableBASE 6.0.0 and 6.0.1” on page 41

- Can be converted back to Version 5 libraries if they have not been expanded.
- Version 6 Transition Libraries are not a concern for users beginning their migration with the Library Bridge
- 3120 Block Size, V6 directory structure, indexes are stored on the library, no paged tables

Note: Version 6 Transition Libraries must be converted using the DK1TCNV utility to Version 6 libraries, and can be identified with the DK1TLCHK utility. For more information see "The DK1TLCHK Utility" on page 32.

Version 6 Libraries

- Defined with tableBASE Version 6 or are converted from Version 5, Bridge, or Version 6 Transition libraries with the conversion utility DK1TCNV.
- Cannot be converted back to any other type of library
- Can only be accessed by tableBASE Version 6
- No fixed Block Size (This feature does not apply to libraries converted from previous library versions to the Version 6 format.)
- V6 directory structure, no paged tables
- Provide enhanced performance unique to Version 6 libraries:
  - Tables have dynamic indexes that are build at open time, instead of having to read indexes from and write indexes to the library.
  - Libraries that are dedicated to a region may cache their directory information, eliminating many library accesses.
  - Libraries can be defined with BLOCKSIZEs optimized for your table characteristics and DASD devices.

tableBASE Version/Release	**Libraries it can access**
tableBASE 5.x	V5
Library Bridge (tableBASE 5.B)	V5, V5 Bridge
tableBASE 6.0.2	V5 Bridge, V6Trans, V6

Table 1-1: Compatibility of Library Versions with tableBASE code

Migration Steps

The following steps describe the process of moving applications from tableBASE Version 5.x with Version 5 libraries to tableBASE Version 6.0.2 with Version 6 libraries. This description assumes that all applications are currently running in tableBASE Version

5.x, and there are no Version 6 applications. For customers that have already partially migrated to Version 6, please see “Appendix B: tableBASE 6.0.0 and 6.0.1” on page 41.

1. Install the Library Bridge

Applications and existing Version 5 Libraries will run as they did before installing the Library Bridge. TBOL/CICS and TBOL/ISPF are also applications and will not be changed by the installation of the Library Bridge. The version of TBOL remains the same before and after installing the Library Bridge. See Chapter 2 “Installation Overview”on page 9.

Note: If technical support is required while using the Library Bridge, please indicate what release of Version 5 (5.0.2 or 5.1) is being used with the Library Bridge.

2. Set up your environment to use the Library Bridge code

For example, modify your JCL procedures for Batch, CICS, IMS and other applications to point to the load library containing the Library Bridge code. This includes TBOL/CICS and TBOL/ISPF.

Note: If you are installing the Library Bridge and your current release is 5.0.2, there is an important improvement in the product that could have an impact on your production systems. When using tableSPACE to hold tables, there is a disk component to hold tables temporarily if main memory is fully utilized. TBTSLIB is the DDNAME that points to this disk space. In CICS, tableSPACE with TBTSLIB is always used by default. In Release 5.0.2, tableBASE does not verify if TBTSLIB is available and properly defined until it is required for overflow. In the Bridge Release (and Release 5.1.0) this check is performed at first access to tableBASE to insure that a job or task does not abend halfway through processing. If you are migrating from Release 5.0.2 you were able to process without ever referencing TBTSLIB if there was no need. In order to prevent untimely abends with the Bridge release the validation of TBTSLIB is always performed first. If tableBASE finds that TBTSLIB is not properly defined or initialized, the job or task will abend with a G040 or 0040 depending on the environment.

Library Bridge can be used to access the existing Version 5 libraries. It is recommended that all applications are using the Library Bridge release before advancing to the next step.

3. Convert tableBASE 5 Libraries to Bridge Libraries

Bridge libraries can only be accessed by applications using the Library Bridge or Release 6.0.2. Conversion is accomplished using the DK1TCNV utility (Chapter 4 “Library Conversion Utilities”on page 27)

Conversion of all libraries to the Bridge Library format may be done gradually; however, care must be taken to ensure that applications accessing tables on the Bridge Libraries

use the Library Bridge as the earlier Version 5.x releases are not able to access the Bridge Libraries.

Note: You can identify which type of library you have by running the utility DK1TLCHK. See Chapter 4 “The DK1TLCHK Utility”on page 32.

The Library conversion to Bridge Libraries introduces some changes into your existing tableBASE Version 5.x environment:

- Paged tables that are converted during a Library Bridge conversion will no longer be SMC=Paged, Index=True but rather SMC=Resident, Index=Pointer. These tables remain Resident/Pointer/Hash even if the library is converted back to the Version 5 format.
- A larger TSR may be required for tables opened from a Bridge Library which were converted from SMC=Paged. When such a table is opened, the entire table must now fit into the TSR and not just a single 3120-byte page at a time. This may be the largest impact in the migration to Version 6. Most installations however, never use Paged tables and if this is the case no change in TSR size is anticipated.
- Library expansion must be done using the corresponding version of TBEXEC. For example if a Bridge library must be expanded, use the TBEXEC provided with Library Bridge.

Note: Version 5 expansion restriction still apply (see "tableBASE Release 5.x library expansion limits" in Appendix B of the Installation Guide for tableBASE 6.0.2)

It is recommended that all applications access their tables from the Bridge Libraries before advancing to the next step.

4. Install tableBASE Release 6.0.2

Please see the tableBASE Installation Guide and Release Notes for Release 6.0.2. Applications using the Library Bridge code and the V5 Bridge libraries will continue to run as they did before. TBOL/CICS 6.0.2 and TBOL/ISPF 6.0.2 are installed at this point. TBOL/CICS users will require additional steps (see TBOL/CICS in the tableBASE 6.0.2 Installation Guide).

5. Set up your environment to use tableBASE 6.0.2

tableBASE 6.0.2 can be used to access both Bridge and V6 libraries. Therefore modification of the application’s JCL procedures to use release 6.0.2 may be done gradually. In order to access Version 6 libraries the JCL must be modified to use tableBASE Release 6.0.2

Test and ensure all libraries needed by applications are in either Bridge or Version 6 library formats

6. Convert all Version 5 Bridge Libraries to Version 6 Libraries

Once all applications are migrated to tableBASE Version 6.0.2, convert (gradually if you like) all Version 5 Bridge libraries to Version 6 libraries to take advantage of the performance enhancements, a**nd complete the migration**.

Conversion is accomplished using the DK1TCNV utility (Chapter 4 “Library Conversion Utilities”on page 27)

2 Installation Overview

This chapter covers the information needed to install the Library Bridge (tableBASE Release 5.B). The Library Bridge is available for z/OS and OS/390 environments. The program (load) libraries that are delivered are customized to the requirements of each customer. Regardless of whether you are upgrading from Release 5.0.2 or 5.1.0, the load library contains a complete Library Bridge with all the programs required for your licensed interfaces (with the exception of TBOL/CICS and TBOL/ISPF which remain at the original Version 5 level until the migration to tableBASE 6.x is complete).

The Library Bridge is an extension built on the latest releases of Version 5 of tableBASE. The Library Bridge release contains all the fixes of releases 5.0.0, 5.0.2, 5.1.0, and the VTS release 5.2.0.

Once installed, the Library Bridge code will be used by applications to access tables in Bridge libraries.

Note: If technical support is required while using the Library Bridge, please indicate what release of Version 5 (5.0.2 or 5.1) and of VTS are being used with the Library Bridge.

Overview of the Installation Process

This section discusses the Library Bridge software installation process. It lists the essential and recommended planning steps.

Installation Essentials

Here is an overview of the required steps to install the Library Bridge:

1. Copy datasets from a tape or CD.
2. For each component that you have licensed:
   a. set some site-specific system defaults

b. tailor the component by performing some assemblies, link-edits, and moving of datasets

c. run a test procedure to verify a successful installation

d. update any internal tableBASE user documentation to reflect local defaults

The software (batch/TSO) is the base product, which all sites receive. Optional tableBASE Library Bridge components are:

- IMS TM interface
- CICS interface
- VTS

Dataset Naming Conventions

Before starting the installation process, consider the following:

- Most of the datasets on the distribution tape are for access by all your users, for example, load modules. Some are for use only by the system installer or system administrator. The following chapters outline usage of the datasets that will be installed. However, be aware that the distribution tape does not segregate them: all JCL procedures are in one dataset, all load modules are in another dataset. Access to these various files may be controlled by having different datasets with different levels of access.
- The datasets you will copy from the CD/tape are named in the supplied installing JCL, such as *YOUR.PREFIX.BRIDGE*.LOAD, *YOUR.PREFIX.BRIDGE*.CNTL. You will have to plan your site's actual naming convention.
- tableBASE documentation, and any subsequently distributed PTFs (Program Fixes), refer to the datasets as we have named them. Thus, the administrator may be asked to apply a PTF to *YOUR.PREFIX.BRIDGE*.LOAD. You must be able to identify your equivalent of it in order to apply the PTF.

If you are upgrading to the Library Bridge you likely have already established naming conventions. However, it may still be valuable to consider using a unique naming convention for the Library Bridge so it can be distinguished from previous releases in applications.

For the most part the installation of the Library Bridge consists of replacing several modules in the Version 5 Load Library of tableBASE. There are two approaches to this; the replacement Library Bridge load modules can be concatenated in front of the existing Version 5 tableBASE Load Libraries or can be used to replace the corresponding modules once properly backed up.

Parameters

Tailor the tableBASE software for optimal performance in both batch and online environments by setting execution-time parameters and switches. The parameters are listed in Table 2-1. Details of their usage are provided in Appendix A.

Default execution-time parameters can be modified by changing the default values, or, by specifying them at execution time.

To modify the default values for a specific interface, change the settings in the appropriate member of the *YOUR.PREFIX.BRIDGE*.SRC dataset, reassemble and relink it. Models for reassembling and relinking are supplied in the *YOUR.PREFIX.BRIDGE*.CNTL partitioned data set. These procedures are described in Chapter 3 “Installing the Library Bridge” on page 17.

At execution time, some of the default values can be overridden by specifying them in a dataset defined by DDNAME TBOPT and/or TBOPTV. See “Appendix A: tableBASE Parameters” on page 33 for details on coding parameters in the TBOPT or TBOPTV dataset.

Table 2-1: Parameters

Parameter	Description
JFILID	CICS Journal File ID - specifies the CICS journal file number if strobe records are to be written.
DATERTNX	Date-Sensitive Processing Found Code - specifies whether X is to be returned as a Found Code.
DELIM	Delimeter for the Fetch Generic (FG) command.
XA	Specifying whether to obtain memory for tables "above the line".
MULTOPNX	Multiple Alternate Index - this is maintained for compatibility with previous releases, and is not used in tableBASE Release 6.0.1.

Table 2-1: Parameters (Continued)

Parameter	Description
SWITCHES	Status Switches - Specifies switch defaults by position: 1.whether to abend on tableBASE user errors 2.whether to wait for tables that are opened for write 3.whether to return empty rows from hash tables 4.whether to automatically open tables on read accesses 5.whether tableBASE traces the commands executed (used for diagnostic purposes) The parameter names for the switches are: - ABEND - WAIT - HASHMT - DEFOPEN - TRACE The OVRRIDE parameter names are: - ABENDO - WAITO - HASHMTO - DEFOPO - TRACEO Descriptions can be found in tableBASE Installation guide.
STROBE	Strobe Interval - specifies the frequency of strobe records (in number of tableBASE calls).
TSREGION / TSR	Table Space Region Size - specifies the size of memory to be allocated for open tables for a region.
VTSFIRST, VTSLAST	VTS Search Sequence - specifies VTS-TSR names to be searched for open tables. Applies only to customers installing the optional VTS.
VTSNAME	Specifies the Name of a VTS-TSR
VTSNMTAB	Maximum Number of Tables - specifies the maximum number of open tables allowed in the VTS-TSR.
VTSSIZE	Dataspace Size for VTS-TSR
VTSTEMP	Dynamically define the Subsystem Name

Loading the Library Bridge Software from CD

To install the tableBASE Library Bridge from the installation CD, you will need the capability to transfer files from the CD to the mainframe using FTP.

The CD contains three files containing the licensed tableBASE components. The files must be uploaded to RECFM=FB, LRECL=80, BLKSIZE=3120 sequential datasets on your MVS system.

It may be necessary to preallocate the files. If so, allocate *YOUR.PREFIX*.CNTLFLAT and SRCFLAT as 1 track each, and LOADFLAT as 30 tracks.

Upload the files as binary (BIN or IMAGE option). This step creates three sequential files, named *YOUR.PREFIX*.CNTLFLAT, SRCFLAT and LOADFLAT. After completing this step, proceed to "Creating the tableBASE Bridge PDSes".

Loading the Library Bridge Software from Tape

The installation tape is an IBM standard label 18-track 3480 cartridge, recorded with hardware compression. It contains several datasets containing the licensed tableBASE components.

Create your own unload JCL using the sample following. Make changes to the JCL lines flagged with <===== and submit the job.

This step creates three sequential files, named *YOUR.PREFIX*.CNTLFLAT, SRCFLAT and LOADFLAT. After completing this step, proceed to "Creating the tableBASE Bridge PDSes".

```
// INSERT YOUR JOB STATEMENT HERE
//*
//*****************************************************************
//*   THIS JOB LOADS TABLEBASE DISTRIBUTION (V5B) FROM TAPE
//*
//*   MODIFY THIS INSTREAM PROC TO SET *YOUR.PREFIX* AND
//*       *YOUR.18TRK.TAPEUNIT* TO YOUR INSTALLATION STANDARD
//*       AND *TAPE.VOLSER* TO THE EXTERNAL LABEL ON THE TAPE.
//*****************************************************************
//LOADFLAT PROC OUTHLQ=*YOUR.PREFIX*,                          <======
//             CART18=*YOUR.18TRK.TAPEUNIT*,                   <======
//             VOLSER=*TAPE.VOLSER*,                           <======
//             TYPE=,SP1=1,SP2=1,RF=FB,BLK=4000
//COPY     EXEC PGM=IEBGENER
//SYSUT1 DD  DISP=OLD,DSN=DK1TBASE.&TYPE.FLAT,
//             UNIT=&CART18,LABEL=&LABEL,
//             VOL=SER=&VOLSER
//SYSUT2 DD  DISP=(NEW,CATLG,DELETE),DSN=&OUTHLQ..&TYPE.FLAT
//             UNIT=SYSDA,SPACE=(TRK,(&SP1,&SP2,4),RLSE)
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  DUMMY
//         PEND
//*
//********* LOAD TABLEBASE JCL LIBRARY ******************
//CNTL      EXEC LOADFLAT,LABEL=(1,SL),TYPE=CNTL
//********* LOAD TABLEBASE SOURCE LIBRARY ***************
//SRC       EXEC LOADFLAT,LABEL=(2,SL),TYPE=SRC
//********* LOAD TABLEBASE LOAD LIBRARY ******************
//LOAD      EXEC LOADFLAT,LABEL=(3,SL),TYPE=LOAD,SP1=5,SP2=5
```

Figure 2-1: Sample Unload JCL for Tape

Creating the tableBASE Bridge PDSes

The sequential files loaded from the tableBASE Bridge distribution tape or uploaded from the CD have to be converted to PDSes.

Update the dataset names in the following JCL and submit it. It will create three PDSes (CNTL, SRC, LOAD) which will be used during the installation. For detailed installation instructions, see Chapter 3 “Installing the Library Bridge” on page 17.

```
// INSERT YOUR JOB STATEMENT HERE
 //*
 //*************************************************************
 //*   THIS JOB LOADS TABLEBASE BRIDGE PDSES
 //*        FROM SEQUENTIAL DISTRIBUTION FILES.
 //*************************************************************
 //*
 //LOAD    EXEC PGM=IKJEFT01
 //SYSTSPRT DD  SYSOUT=*
 //CNTL     DD  DISP=SHR,DSN=*YOUR.PREFIX*.CNTLFLAT
 //SRC      DD  DISP=SHR,DSN=*YOUR.PREFIX*.SRCFLAT
 //LOAD     DD  DISP=SHR,DSN=*YOUR.PREFIX*.LOADFLAT
 //SYSTSIN  DD  *
   RECEIVE INFILE(CNTL)
         DSN('*YOUR.PREFIX.BRIDGE*.CNTL')
   RECEIVE INFILE(SRC)
         DSN('*YOUR.PREFIX.BRIDGE*.SRC')
   RECEIVE INFILE(LOAD)
         DSN('*YOUR.PREFIX.BRIDGE*.LOAD')
 /*
```

Figure 2-2: Sample PDSes JCL

Considerations when using Library Bridge

There are some operational differences that you should be aware of when using Library Bridge (tableBASE 5.B).

Enqueues

When a table is identified for updating in a region, for example with the use of the Open for Write command (OW), steps are taken to prevent other MVS tasks on the same or other MVS images from updating the same table. This is achieved by issuing an enqueue request that includes the Table Name and Table Library Dataset Name. The major enqueue name is TBLBASE. The scope of the enqueue is SYSTEMS.

An installation's modifications to Global Resource Serialization (GRS) PARMLIB controls must not prevent the propagation of the major enqueue name throughout the complex. Failure to adhere to this can result in the corruption of the tableBASE libraries on DASD shared between several MVS images running tableBASE.

Since these requirements are beyond the scope of the tableBASE software, ensure that these conditions are met if the same tableBASE table libraries are to be shared among separate copies of the operating system.

TBASEV Date-Sensitive Limitation

Library Bridge VTS-TSR handles date-sensitive processing requests only via the TBLBASE stub, using TB-PARM version 5 and the extended command area. Date-

sensitive processing requests using TBASEV and TB-PARM version 4 will set the tableBASE command area's error-code field to 13. This code is returned regardless of the Abend-Switch value.

VTSs and Different Versions of tableBASE

VTS-TSRs created using Library Bridge load libraries are not compatible with applications running with other releases of tableBASE. All applications accessing VTS-TSRs must run with Library Bridge load libraries to access VTS-TSRs created using the Library Bridge load libraries.

3
Installing the Library Bridge

This chapter describes basic steps required to install the Library Bridge software (tableBASE Release 5.B).

The Library Bridge batch software is embedded in the tableBASE base product. Install this component first then install the optional components.

Note: Before you install the Library Bridge batch software, please review the information in Chapter 2.

Install the Batch software

Step 1 - Modify Batch Default Parameters (Optional)

If desired, modify the default parameters for operating Library Bridge in a batch environment.

The parameters are described in Appendix A. The default values for this component are listed below and are also defined in member TB113450 of *YOUR.PREFIX.BRIDGE*.SRC. You may also determine if this is required for the Library Bridge by examining the corresponding module of the prior install of 5.x.

If you are upgrading from Release 5.1, the original settings are as below.

If you are upgrading from Release 5.0.2, the default TSR size was 500K and the STROBE setting was 10,000. If the original 5.0.2 settings are preferred, continue with this step.

If the default parameters are acceptable or the values are overridden at execution through the TBOPT dataset, go to Step 2.

Default Batch Parameters

```
TSR         2048(Note that the TSR size is in kilobytes)
STROBE      100000
```

```
VTSFIRST    C'0000'
VTSLAST     C'0000'
DATERTNX    C'N'
XA          C'Y'
DELIM       *
MULTOPNX    C'Y' (in 5.0.2 this was called MLTPLVWS)
```

Note: The Status Switch setting (SWITCHES) and Overrides (OVRRIDES) are unique to this interface.

Defaults for Status Switches

ABEND	Y	Abend on errors less than 100 or between 1001and 1099
WAIT	N	Do not wait for enqueued tables
HASHMT	Y	Return empty rows in hash tables
DEFOPEN	Y	Allow default open of tables
TRACE	N	Do not trace tableBASE commands

Allow Applications To Change Status Switches

ABENDO	Y	Allow the application to change the value of the ABEND switch
WAITO	Y	Allow the application to change the value of the WAIT switch
HASHMTO	Y	Allow the application to change the value of the HASH-EMPTIES-RETURNE switch
DEFOPO	Y	Allow the application to change the value of the DEFAULT-OPEN switch
TRACEO	Y	Allow the application to change the value of the TRACE switch

To make changes to the installation parameters:

1. Modify *YOUR.PREFIX.BRIDGE*.SRC(TB113450).

2. Reassemble and link-edit the module into the tableBASE batch interface program TBROOT using *YOUR.PREFIX.BRIDGE*.CNTL(AL113450) as a model.

Step 2 - Transfer Batch Modules

If required, transfer the Batch modules to the appropriate system libraries, using the COPYMOD command of IEBCOPY.

Step 3 - Confirm Successful Install

Modify the job statements and names in *YOUR.PREFIX.BRIDGE*.CNTL(VALIDATE).

Execute this job. A completion code of zero confirms that the installation was successful.

This job also tests the command executor (TBDRIVER) and the tableBASE batch utility (TBEXEC). As the job leaves no permanent changes, it may be run at any time to confirm that the base product is operational.

Step 4 - Point TBDRIVER CLIST to Newly Installed Libraries

If you currently use the TBDR CLIST, update the member TBDR in *YOUR.PREFIX*.TBASE.CLIST(TBDR). *YOUR.PREFIX*.TBASE.CLIST(TBDR) is a REXX CLIST that you use to access the TBDRIVER program through TSO.

The reference to *YOUR.PREFIX.BRIDGE*.LOAD must be changed to the actual tableBASE load library Dataset Name.

A similar change would be required to the TBEXEC CLIST if it is being used.

Install the Library Bridge CICS Interface (Optional)

If you have licensed the CICS Interface component, perform the following steps. The installation tape contains additional load modules in *YOUR.PREFIX*.TBASE.LOAD library.

Step 1 - Modify CICS Default Parameters (Optional)

Modify the default parameters for operating the Library Bridge (tableBASE Release 5.B) in a CICS environment, if desired.

The parameters are identified and described in Appendix A. The default values for this component are listed below and are also defined in member TB273450 of *YOUR.PREFIX.BRIDGE*.SRC. You may also determine if this is required for the Library Bridge by examining the corresponding module of the prior install of 5.x.

If you are upgrading from Release 5.1, the original settings are as below.

If you are upgrading from Release 5.0.2, the default TSR size was 500K. If the original 5.0.2 setting is preferred, continue with this step.

If the default parameters are acceptable or the values are overridden at execution through the TBOPT dataset, go to Step 2.

Default CICS Parameters

```
TSR       2048     (Note that TSR size is in kilobytes)
STROBE    100000
```

```
VTSFIRST  C'0000'
VTSLAST   C'0000'
XA        C'Y'
DELIM     C'*'
DATERTNX  C'N'
MULTOPNX  C'Y'     (in 5.0.2 this was called MLTPLVWS)
JFILID    99
```

Note: The Status Switch setting (SWITCHES) and Overrides (OVRRIDES) are unique to this interface.

Defaults for Status Switches

ABEND	Y	Abend on errors less than 100 or between 1001and 1099
WAIT	N	Do not wait for enqueued tables
HASHMT	Y	Return empty rows in hash tables
DEFOPEN	Y	Allow default open of tables
TRACE	N	Do not trace tableBASE commands

Allow Applications To Change Status Switches

ABENDO	Y	Allow the application to change the value of the ABEND switch
WAITO	N	Allow the application to change the value of the WAIT switch
HASHMTO	Y	Allow the application to change the value of the HASH-EMPTIES-RETURNE switch
DEFOPO	Y	Allow the application to change the value of the DEFAULT-OPEN switch
TRACEO	Y	Allow the application to change the value of the TRACE switch

If the values above are acceptable or you wish to use the Override feature provided via the TBOPT dataset, no additional work is necessary in this step.

To make changes to the installation parameters:

1. Modify *YOUR.PREFIX.BRIDGE*.SRC(TB273450).

2. Reassemble and link-edit the module into the tableBASE CICS interface program TBROOTC using *YOUR.PREFIX.BRIDGE*.CNTL(AL273450) as a model.

Step 2 - Transfer CICS Modules

If required, transfer the CICS modules to the appropriate system libraries, using the COPYMOD command of IEBCOPY.

Step 3 - Confirm Successful Installation

Modify your CICS test region to point to the Library Bridge load library. Once the CICS region has been successfully started, verify the installation of the CICS interface.

1. Sign on to CICS.

2. On a clear screen enter the transaction TBDR.

3. Press <ENTER>. The **tableBASE CICS Driver** screen is displayed. You are now able to enter tableBASE and DRIVER commands.

4. On the first line enter the command PR and any table name known to be available. The table name EXAMPLE can be used if still accessible. When ENTER is pushed, some data should be seen on the screen. If this is successful, PF3 will terminate the CICS DRIVER. If these steps are not successful, contact tableBASE customer support.

5. For more details on the operation of the CICS DRIVER refer to the tableBASE Programmer's Guide of your release of tableBASE.

Install the Library Bridge IMS TM Interface (Optional)

If you have licensed the tableBASE IMS TM Interface component, perform the following steps to install the Library Bridge IMS TM Interface. The installation tape contains additional load modules in the *YOUR.PREFIX.BRIDGE*.LOAD library.

Step 1 - Modify IMS Default Parameters (Optional)

If desired, modify the default parameters for operating the Library Bridge in an IMS message processing region (MPR).

The parameters are identified and described in Appendix A. The default values for this component are listed below and are also defined in member TB133450 of *YOUR.PREFIX.BRIDGE*.SRC. You may also determine if this is required for the Library Bridge by examining the corresponding module of the prior install of 5.x.

If you are upgrading from Release 5.1, the original settings are as below.

If you are upgrading from Release 5.0.2, the default TSR size was 150K and the STROBE setting was 10,000. If the original 5.0.2 setting is preferred, continue with this step.

If the default parameters are acceptable or you override the values at execution through the TBOPT dataset, go to Step 2.

Default IMS Parameters

```
TSR         2048       (TSR size is specified in kilobytes)
STROBE      100000
VTSFIRST    C'0000'
VTSLAST     C'0000'
DATERTNX    C'N'
XA          C'Y'
DELIM       C'*'
MULTOPNX    C'Y'
```

Note: The Status Switch setting (SWITCHES) and Overrides (OVRRIDES) are unique to this interface.

Defaults for Status Switches

ABEND	N	Abend on errors less than 100 or between 1001and 1099
WAIT	N	Do not wait for enqueued tables
HASHMT	Y	Return empty rows in hash tables
DEFOPEN	Y	Allow default open of tables
TRACE	N	Do not trace tableBASE commands

Allow Applications To Change Status Switches

ABENDO	Y	Allow the application to change the value of the ABEND switch
WAITO	Y	Allow the application to change the value of the WAIT switch
HASHMTO	Y	Allow the application to change the value of the HASH-EMPTIES-RETURNE switch
DEFOPO	Y	Allow the application to change the value of the DEFAULT-OPEN switch
TRACEO	Y	Allow the application to change the value of the TRACE switch

If the values above are acceptable or you wish to use the Override feature provided via the TBOPT dataset, no additional work is necessary in this step.

To make changes to the installation parameters:

1. Modify *YOUR.PREFIX.BRIDGE*.SRC(TB133450).

2. Reassemble and link-edit the module into the tableBASE IMS interface program TBROOTI using *YOUR.PREFIX.BRIDGE*.CNTL(AL133450) as a model.

Step 2 - Transfer IMS Modules

If required, transfer the IMS modules to the appropriate system libraries using the COPYMOD command of IEBCOPY.

Step 3 - Operational Considerations

Preload the module TBROOTI into each IMS Message Processing Region (MPR) that is capable of running a transaction using tableBASE.

You also have the option of loading a different copy of TBROOTI into each MPR region by adding a 1-character suffix onto the module name (TBROOTIx, where x is alphanumeric). This option allows a different value of the TSR to be specified for different IMS MPR regions. You can create the TBROOTIx by re-linking TBROOTI using *YOUR.PREFIX.BRIDGE*.CNTL (AL133450) as a model.

Install the tableBASE Library Bridge VTS-TSR (Optional)

If you have licensed the tableBASE VTS component, perform the following steps for the Library Bridge installation. The installation tape contains additional load modules in *YOUR.PREFIX.BRIDGE*.LOAD library.

Step 1 - Modify Default Parameters (Optional)

If desired, modify the default parameters for operating Library Bridge with VTS-TSR(s).

The parameters are identified and described in Appendix A. The default values for this component are listed below and are also defined in member CV113450 of *YOUR.PREFIX.BRIDGE*.SRC. You may also determine if this is required for the Library Bridge by examining the corresponding module of the prior install of 5.x.

If you are upgrading from Release 5.1 or 5.2, the original settings are as below.

If you are upgrading from Release 5.0.2, the default STROBE setting was 10,000 and if the original 5.0.2 setting is preferred, continue with this step.

If the default parameters are acceptable or you override the values at execution through the TBOPTV dataset, go to Step 2.

Default VTS Parameters

```
STROBE    100000
DELIM     C'*'
```

Note: The Status Switch settings (SWITCHES) and Overrides (OVRRIDES) are unique to this interface.

Defaults for Status Switches

ABEND	N	Abend on errors less than 100 or between 1001and 1099
WAIT	N	Do not wait for enqueued tables
HASHMT	N	Return empty rows in hash tables
DEFOPEN	N	Allow default open of tables
TRACE	N	Do not trace tableBASE commands

Allow Applications To Change Status Switches

ABENDO	Y	Allow the application to change the value of the ABEND switch
WAITO	Y	Allow the application to change the value of the WAIT switch
HASHMTO	Y	Allow the application to change the value of the HASH-EMPTIES-RETURNE switch
DEFOPO	Y	Allow the application to change the value of the DEFAULT-OPEN switch
TRACEO	Y	Allow the application to change the value of the TRACE switch

To make changes to the installation parameters:

1. Modify *YOUR.PREFIX.BRIDGE*.SRC(CV113450).

2. Reassemble CV113450 and link-edit into load module TBROOTV. Use *YOUR.PREFIX.BRIDGE*.CNTL(AL11345V) as a model.

Step 2 - Copy Library Bridge Load Modules (Optional)

If it is necessary to copy the Library Bridge (tableBASE Release 5.B) load modules to another system library, use the IBM utility IEBCOPY to do so. If reblocking is required use the COPYMOD control statement.

If *YOUR.PREFIX.BRIDGE*.LOAD is not APF-authorized, then the member AUTHLIB of *YOUR.PREFIX.BRIDGE*.CNTL can be used to copy modules to an authorized library (*YOUR.PREFIX*.TBASE.AUTHLIB). A system programmer should be able to confirm that an appropriate authorized load library is set up.

Note: The VTS server must use an authorized library. Modules TBROOTV and TBNUCLV are also used by regions accessing VTS. In those regions they do not have to be authorized.

Step 3 - Confirm Successful VTS Install

To verify that VTS is installed correctly, perform the following steps:

1. Tailor the JCL, STARTVTS, in *YOUR.PREFIX.BRIDGE*.CNTL to point to the authorized library, created in Step 2.

2. Submit STARTVTS, which starts up a VTS Server.

3. Tailor VALIDVTS, in *YOUR.PREFIX.BRIDGE*.CNTL to point to the new Library Bridge modules.

4. Submit VALIDVTS. A successful test should return completion code zero.

5. Stop the VTS Server (the MVS command is "p jobname").

4
Library Conversion Utilities

This chapter covers two new utilities DK1TCNV and DK1TLCHK.

The Library Conversion Utility, DK1TCNV, is used to convert tableBASE libraries between Version 5 (V5), Library Bridge (Bridge), Version 6 Transition (V6TRANS), and Version 6 (V6). This chapters identifies and describes DK1TCNV input parameters, shows a variety of conversion functions, and ends with example JCL for executing DK1TCNV.

The Library Version Identification utility, DK1TLCHK, is used to identify the version of a tableBASE library. It is described at the end of this chapter.

The DK1TCNV Utility

Note: DK1TCNV does not require that source and target libraries be both BDAM or both VSAM, so it is possible to change between VSAM and BDAM while converting.

The DK1TCNV utility has free-format input using keywords that invoke four library conversion functions. The general format is:

```
COMMAND KEYWORD1=VALUE KEYWORD2=VALUE;
```

`KEYWORD=VALUE` is the representation of a keyword-value combination and may be repeated for each parameter of the command.

The following rules apply:

1. Each command sequence must start on a new line.

2. A command sequence must be terminated by a semicolon (;). Anything following a semicolon is ignored.

3. The command and each keyword-value combination must be followed by at least one blank.

4. Keyword-value combinations may appear in any order.

5. Many library conversion requests may be entered in the same input file.

6. Columns 73-80 of a statement are ignored.

7. An asterisk (*) in column one means that the line is a comment.

Keyword Parameters

Input parameters for DK1TCNV are keywords with assigned values:

FROMLIB	Source library DDname.
TOLIB	Target library DDname.
TOFORMAT	Either V5, BRIDGE, V6 or V6TRANS.
TBLPREFX	Four alphanumeric characters used when renaming invalid tables. DK1TCNV will rename any tables with invalid names (i.e. all blanks, hex zeroes or hex 'FF'). The new name will be the TBLPREFX value followed by a numeric suffix starting from 0001. The numeric suffix is in character form, not binary. The default TBLPREFX is V5BR.

Note: DK1TCNV automatically detects the format of the source library.

Four Conversion Utility Commands

Note: Target libraries for any conversion must be a newly defined library. The source and target must be different libraries.

CONVERT

The tableBASE library is converted to the format specified with the TOFORMAT parameter, the version of the source library is detected automatically. There are four types of libraries: Version 5 (V5), Library Bridge (Bridge), Version 6 Transition (V6TRANS) and Version 6 (V6). For more information on these library types see “Description of tableBASE Library Versions” on page 3.

It is used to perform to do the following:

1. Convert from V5 to BRIDGE, V6TRANS or V6.

2. Convert from BRIDGE or V6TRANS to V6.

3. Convert from BRIDGE to V6TRANS.

4. Convert from V6TRANS to BRIDGE.

Examples:

```
CONVERT FROMLIB = MAINLIB TOLIB = TESTLIB TOFORMAT = BRIDGE;
CONVERT FROMLIB=MAINLIB    TOLIB=MAINLIB2 TOFORMAT = V6;
CONVERT FROMLIB = OLDLIB
        TOLIB = JANLIB2
        TOFORMAT=BRIDGE;
```

REVERT

Backward conversion from BRIDGE or V6TRANS to V5. The target library will be in V5 format.

Example:

```
REVERT FROMLIB = MAINLIB TOLIB = NEWLIB;
```

FIXLIB

Detect and fix V5 problems which conversion would also detect and fix. The source must be a Version 5 library.

Examples:

```
FIXLIB FROMLIB=MAINLIB TOLIB=PRODLIB;
FIXLIB FROMLIB=OLDLIB TOLIB=MAINLIB2 TBLPREFX=V5@@;
```

DIAGNOSE

Diagnose a tableBASE library.

Example:

```
DIAGNOSE FROMLIB = MAINLIB;
```

Completion Codes

Completion codes listed in Table 4-1 are set to indicate whether problems were encountered. If any of the commands or parameters are invalid, none of the commands will be processed, errors will be displayed in TBREPORT and a completion code of 16 will be

returned. If more than one completion code applies, the highest code will be returned and complete details will be found in TBREPORT.

Completion Code	Description
0	All library conversion commands were successfully processed.
4	A warning was issued for one or more library conversion commands, but the conversion(s) was successful.
16	One or more errors were encountered which prevented the library conversion from proceeding. Warnings may also have been issued.

Table 4-1: DK1TCNV Completion Codes

JCL for Creating BRIDGE libraries

Note: VSAM is not support in tableBASE 5.0.2.

Here are two examples of JCL (BDAM and VSAM) for the execution of DK1TCNV to create a BRIDGE library:

BDAM - CNV52BB

```
//*  INSERT YOUR JOB STATEMENT HERE
//*
//*****************************************************************
//*  DELETE,CREATE STEPS DELETE/ALLOCATE A BDAM TABLEBASE LIBRARY
//*****************************************************************
//DELETE   EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD  *
 DELETE (*YOUR.PREFIX.BRIDGE*.MAINLIBB) CLUSTER
 SET MAXCC=0
//CREATE   EXEC PGM=IEFBR14
//MAINLIBB DD DISP=(,CATLG),DSN=*YOUR.PREFIX.BRIDGE*.MAINLIBB,
//            UNIT-SYSDA,SPACE=(3120,300),
//            DSORG=DA,RECFM=F,LRECL=3120,BLKSIZE=3120
//*****************************************************************
//*     CONVERT BDAM LIBRARY
//*****************************************************************
//CONVERT  EXEC PGM=DK1TCNV
//STEPLIB  DD  DISP=SHR,DSN=*YOUR.PREFIX.BRIDGE*.LOAD
//SOURCE   DD  DISP=OLD,DSN=*YOUR.PREFIX.V5*.MAINLIB
//TARGETB  DD  DISP=OLD,DSN=*YOUR.PREFIX.BRIDGE*.MAINLIBB
//TBREPORT DD  SYSOUT=*
//CNTLCARD DD *
*  CONVERT TO A BDAM LIBRARY
CONVERT FROMLIB=SOURCE
       TOLIB=TARGETB TOFORMAT=BRIDGE
       TBLPREFX = XXXX;
```

VSAM - CNV52BV

```
//*  INSERT YOUR JOB STATEMENT HERE
//*
//*******************************************************************
//*     CREATE STEP DELETES/ALLOCATES A VSAM TABLEBASE LIBRARY
//*******************************************************************
//CREATE   EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD  *
 DELETE (*YOUR.PREFIX.BRIDGE*.MAINLIBV) CLUSTER
 SET MAXCC=0
 DEFINE CLUSTER (NAME(*YOUR.PREFIX.BRIDGE*.MAINLIBV) -
                 RECSZ(3120 3120) REC(300) SHR(3) -
                 CISZ(3584) NUMBERED SPEED REUSE)
/*
//*******************************************************************
//*     CONVERT VSAM LIBRARY
//*******************************************************************
//CONVERT  EXEC PGM=DK1TCNV
//STEPLIB  DD  DISP=SHR,DSN=*YOUR.PREFIX.BRIDGE*.LOAD
//SOURCE   DD  DISP=OLD,DSN=*YOUR.PREFIX.V5*.MAINLIB
//TARGETV  DD  DISP=OLD,DSN=*YOUR.PREFIX.BRIDGE*.MAINLIBV
//TBREPORT DD  SYSOUT=*
//CNTLCARD DD *
*  CONVERT TO A VSAM LIBRARY
CONVERT FROMLIB=SOURCE
       TOLIB=TARGETV TOFORMAT=BRIDGE
       TBLPREFX = XXXX;
//*
```

Virtual Memory Requirements

The DK1TCNV utility requires sufficient virtual memory to complete the conversion of a library. The amount of virtual memory required can be calculated by using the following formulas and using the result that is largest:

Region-in-byte = Number-of-library-blocks * 16 + 3120 + 3120

or

Region-in-byte = Largest-table-size * table-rows * 2

Conversion Restrictions

Once a library has been converted to the Version 6 format it cannot be converted back. However, it is possible to convert Library Bridge and Version 6 Transition Libraries back to the Version 5 format provided that the V6TRANS library has not been expanded.

The DK1TLCHK Utility

The Library Version Identification Utility, DK1TLCHK, is a diagnostic tool used to identify the version number of, and any structural problems with a tableBASE library.

It may be used if a tableBASE application encounters an error or abend 0062 (version incompatibility error), or an S001 abend (non-compatible versions of tableBASE attempting to access a Version 6 or Bridge Library).

The Library Version Identification utility, DK1TLCHK, is used to identify the version of a library. Compatible versions of code and libraries are described in Table 1-1, "Compatibility of Library Versions with tableBASE code," on page 4. Other combinations will produce errors. For example, Version 6 code trying to read a Version 5 library, will return code 62; Version 5.0.2 or 5.1 code trying to read a Bridge or Version 6 library will abend with a S001.

The JCL to run DK1TLCHK is:

```
//*  INSERT YOUR JOB CARD HERE
//*
//*****************************************************************
//*     TABLEBASE LIBRARY IDENTIFICATION
//*****************************************************************
//LIBCHECK EXEC PGM=DK1TLCHK,PARM=CHECKLIB
//STEPLIB  DD  DISP=SHR,DSN=*YOUR.PREFIX.BRIDGE*.LOAD
//SYSPRINT DD SYSOUT=*
//SYSOUT   DD SYSOUT=*
//TBREPORT DD SYSOUT=*
//CHECKLIB DD DISP=SHR,DSN=*YOUR.PREFIX*.MAINLIB
```

Appendix A: tableBASE Parameters

Appendix A lists the tableBASE parameters.

JFILID - CICS Journal File Id

This parameter, CICSJRNL, pertains only to the CICS Transaction Server interface. It identifies the CICS Journal File onto which the TABLE SPACE Report records are to be written by the system. The delivered default value for the CICSJRNL parameter is 99.

This parameter can only be changed in the source member TB273450 in *YOUR.PREFIX.BRIDGE*.SRC and not in the TBOPT DD statement.

DATERTNX - Date-Sensitive Processing Found Code

The DATERTNX parameter controls the value placed in the found code for a fetch by count (FC) operation on a date-sensitive table.

With an FC command it is possible that the row retrieved is not within the date range. When this occurs, the found code is normally set to N to reflect the logical condition that the retrieved row is not a match. For compatibility with previous releases, the found code returned under this condition can be made to be X. The default setting of N provides this compatibility with previous releases.

If Date-Sensitive Processing is being introduced in a new application, or no FC commands are used in the application, it is strongly recommended that DATERTNX=Y be specified so the found code will never be set to X. The delivered default is DATERTNX=N for backwards compatibility.

This parameter can be changed in source members TB113450, TB133450, TB273450 in *YOUR.PREFIX.BRIDGE*.SRC and in the TBOPT DD statement.

DELIM - Fetch Generic Delimiter

This parameter identifies the character to denote the end of generic key used in the FG (Fetch Generic) command.

The delivered default value for DELIM is an asterisk (*), for example, FG,table-name,key*. We recommend that programmers use the key length override function in the tableBASE command area.

This change affects only this single environment, if you are operating applications across multiple environments this change will need to be made in each installed interface.

This parameter can only be changed in members TB113450, TB133450, TB273450, CV113450 in *YOUR.PREFIX.BRIDGE*.SRC but not in the TBOPT or TBOPTV DD statements.

XA - Extended Architecture

This parameter is tested by tableBASE to decide whether to obtain memory for tables "above the line". It requires an MVS/XA or MVS/ESA operating system.

Set the parameter to "Y" to obtain memory from above the line.

The default value for this switch is "Y".

This parameter can only be changed in the source members TB113450, TB133450, TB273450 in *YOUR.PREFIX.BRIDGE*.SRC but not in the TBOPT DD statements.

MULTOPNX - Multiple Alternate Index (MLTPLVWS)

MULTOPNX (MLTPLVWS in Release 5.0.2 Batch and CICS) is a flag indicating whether to allow Multiple Alternate Indexes to a Data Table to be open concurrently. Releases of tableBASE prior to Release 5.0 allowed only one Index to be open. Subsequent Indexes were invoked using the IA command. See the tableBASE Programming Guide for a discussion of Alternate Indexes.

This option is supported for compatibility purposes only.

The valid value for this flag is Y or N, and Y is the delivered default.

This parameter can be changed in the source members TB113450, TB133450, TB273450 in *YOUR.PREFIX.BRIDGE*.SRC or in the TBOPT DD statements.

Note: For assistance with this default value, please contact tableBASE customer support.

SWITCHES - Status Switches

The Status Switches are a series of one-byte codes for altering the operation of the Application Programming Interface used by your programs when requesting a tableBASE service (see Table A-1).

The switches are stored in the parameter module for the interface. As each batch job or online task begins, the run-time values will be set according to the values in the parameter module but may be changed via the values in the TBOPT file (see "Parameters" on page 11).

The application may also change the values with the Change Status (CS) command (unless changing a particular switch is suppressed via the override controls.

This parameter can be changed in the source members TB113450, TB133450, TB273450, CV113450 in *YOUR.PREFIX.BRIDGE*.SRC (see Table A-1 for parameter names). In the TBOPT DD statement, the change is made using the keyword SWITCHES= followed by the string to be set.

Table A-1: Switches Values

Switch Name	Switch Setting	Meaning
Abend on Errors (ABEND)	Y	Abend processing is to be performed on tableBASE errors 0001-0099 or 1001-1099. Errors 100 to 999 and errors greater than 1099 always abend.
	N	Abend processing is not to be performed on tableBASE errors 0001-0099 or 1001-1099. User programs will handle these return codes.
Wait for Enqueued Table (WAIT)	Y	tableBASE is to wait for tables that are enqueued.
	N	tableBASE is not to wait for such enqueued tables. In this case tableBASE will terminate with a user 0072 abend if abend processing is enabled, or, will return an error code of 0072, (TABLE UNAVAILABLE; NO WAIT) in the command area if abend processing has been disabled.
	Note: Waiting in an online environment is normally discouraged. In CICS and IMS, the default is set to N.	
Return Empty Rows in Hash Tables (HASHMT)	Y	tableBASE is to return empty rows for hash tables when using count operations.
	N	tableBASE is to suppress the return of empty rows for hash tables.
Allow Implicit Open Of Tables (DEFOPEN)	Y	tableBASE is to automatically open tables for read on first access.
	N	tableBASE is to suppress automatic opens; an explicit open command, OR, OW, or IA must be issued to open a table.

Table A-1: Switches Values (Continued)

Switch Name	Switch Setting	Meaning
Trace tableBASE Commands (TRACE)	Y	not operational for Version 5.
	N	not operational for Version 5.

Note: The enabling of "Allow Implicit Open Of Tables" can cause CICS transactions to lock out batch processing if the transaction is accessing a table in the VTS that is not open and no tableBASE library for that region exists. When no tableBASE library for the region exists, turn DEFOPEN off

OVRRIDES - Allow Changes To Status Switches

The Status Switches may be changed by the application with the use of the Change Status (CS) line command. Overriding individual Status Switches may be inhibited by the settings of the override controls determined when the product is installed.

This parameter can be changed in the source members TB113450, TB133450, TB273450, CV113450 in *YOUR.PREFIX.BRIDGE*.SRC (the names are as below). In the TBOPT DD statement, the change is done using keyword OVVRIDES= followed by the string to be set.

The defaults for these values will depend upon the interface. Table A-2.

Table A-2: Override Values

Overrides Variable	Override Setting	Meaning
Allow Change To Abend On Errors (ABENDO)	Y	The application is allowed to set the ABEND status switch.
	N	The application is not allowed to set the ABEND status switch.
Allow Change To Wait For Enqueued Tables (WAITO)	Y	The application is allowed to set the WAIT status switch.
	N	The application is not allowed to set the WAIT status switch.
Allow Change To Return Empty Rows In Hash Tables (HASHMTO)	Y	The application is allowed to set the HASH-EMPTIES-RETURNED status switch.
	N	The application is not allowed to set the HASH-EMPTIES-RETURNED status switch.

Table A-2: Override Values (Continued)

Overrides Variable	Override Setting	Meaning
Allow Change To Permit Implicit Open Of Tables (DEFOPO)	Y	The application is allowed to set the IMPLICIT OPEN status switch.
	N	The application is not allowed to set the IMPLICIT OPEN status switch.
Allow Change To Trace tableBASE Commands (TRACEO)	Y	not operational for Version 5.
	N	not operational for Version 5.

STROBE - Strobe Interval

Specify a numeric value, from 0 to 10,000,000 to control the intervals at which Table Space statistics report records are to be generated. After the specified number of calls to tableBASE that access the TSR the strobe reporting routine is called.

The delivered default is 100,000. Setting STROBE = 0 eliminates all Table Space statistics reporting.

This parameter can be set in all source members TB113450, TB133450, TB273450, CV113450 in *YOUR.PREFIX.BRIDGE*.SRC as well as in the TBOPT DD statement.

Note: The numeric value must be specified without commas.

TSREGION - Table Space Region Size

The Table Space Region Size parameter is an integer that represents the amount of storage to be used for the TABLE SPACE REGION (TSR). This parameter controls the amount of memory that will be GETMAINed for table usage. This space is allocated once on the first call to tableBASE.

The format for this parameter is:

- nnnn = bytes
- nnnK = Kbytes
- nnnM = Mbytes

Note: K and M were not supported in Release 5.0.2

This parameter can be set in source members TB113450, TB133450, TB273450, in *YOUR.PREFIX.BRIDGE*.SRC and in the TBOPT DD statement.

tableBASE manages the allocated memory based on total table demand patterns. It uses the operating system's virtual memory management but adds an additional layer of sophisticated, highly specialized memory management and rollout/rollin strategies to further optimize performance.

tableBASE makes table rollout decisions based on table size, structure and usage patterns to pre-empt operating system paging. The TSR is managed intelligently to optimum advantage based on the needs of applications. Furthermore, TSR fragmentation is minimized through automatic dynamic reorganization of tables to keep effective memory utilization high.

Online tableBASE applications always use tableSPACE memory management. For example, tableBASE/CICS must use tableSPACE. Choosing a TSR that is too small can have a significant adverse effect on response time if rollout/in activity is high.

Batch applications may also use the tableSPACE services to control memory fragmentation and to limit the program's high water mark for tables. When tableSPACE is not invoked, tableBASE obtains space individually for each table from pools generally available for such memory requests. Space is released when the tables are closed or when the job step ends. The inclusion of a //TBOPT DD statement will cause a TABLE SPACE REGION to be used. The amount specified in the parameter can be overridden by specifying the desired TSR in the TBOPT file (see "Modifying Parameters" below).

Under XA and ESA the space for tables, or the tableSPACE Region (TSR), is obtained above the 16 Mbyte line.

If you are upgrading from an earlier tableBASE release, you can find out your current TSR size by:

"using the LT command in a tableBASE driver program (batch program TBDRIVER, CICS transaction TBDR, tablesONLINE/ISPF option 6) or

"browsing strobe reports produced by your current tableBASE release.

However, you should be aware that, if you are using a TBOPT file to modify parameters, the TSR size reported will be that currently in effect for the particular program in whose JCL the TBOPT DD statement appears.

Note: If you are upgrading from a release earlier than 4.2, please contact tableBASE Customer Support.

Failure to set your TSREGION size parameter appropriately can produce the following error:

Error 92:There is insufficient tableSPACE region available. Increase TSR size.

The default value for the TABLE SPACE REGION SIZE is set at 2 megabytes for

all interfaces.

VTSFIRST, VTSLAST - VTS Search Sequence

These parameters apply only if you have licensed the optional VTS Interface/Agent.

There are two parameters that can be used to control the sequence in which tableBASE searches libraries when VTS is installed.

VTSFIRST is the name of the VTS-TSR that is to be searched for tables before searching any libraries listed in the tableBASE library-list.

If you wish to override the installation default for this parameter, it is strongly recommended that you use the TBOPT DD statement to do so. If you set the VTSFIRST parameter by tailoring the installation parameters at installation time, problems may occur. For example, any batch processes that operate on the library copy of a table that is open in VTS will abend with a tableBASE error code of 3.

VTSLAST is the name of the VTS-TSR that is to be searched for tables after searching any libraries listed in the tableBASE library-list.

See the tableBASE Administration Guide for more information on VTS.

The delivered defaults are VTSFIRST, VTSLAST set to null strings.

This parameter can be changed in source members TB113450, TB133450, TB273450, in *YOUR.PREFIX.BRIDGE*.SRC and in the TBOPT DD statement.

Note: Do not change the delivered defaults supplied for these parameters if you have not licensed VTS.

VTSNAME - Specifying the Name of a VTS-TSR

VTSNAME is the four-character MVS subsystem name to be used to identify a VTS Server. VTS Clients use this name to make a logical connection to the Server. The default value is DKL1.

VTSNAME is also used in a user region to specify the VTS-TSR to be accessed by the TBCALLV and TBASEV interfaces. This is supported for backwards compatibility where it was specified in the TBOPTV file.

VTSNMTAB - Maximum number of tables open simultaneously

VTSNMTAB is a numeric, ranging from 1 to 65,535. This value should be larger than the maximum number of tables that the server will have open concurrently. The default value is 500.

A calculation to give an accurate minimum value for VTSNMTAB is: 1 + T + A + LA.

Where:

- T is the total of concurrently open tables
- A is the total of concurrently open alternate indexes for those tables
- LA is the largest number of alternate indexes for any open table that has alternate indexes.

This parameter only be overridden in the TBOPTV file.

VTSSIZE - ESA Dataspace Size for VTS-TSR

This specifies the amount of virtual storage (ESA dataspace size) to be allocated for holding table data. It needs to be large enough to contain all the tables that are to be made available by the server. If the parameter ends with K, M, or G, then that number of Kilobytes, Megabytes or Gigabytes is allocated. The default as supplied by Data Kinetics is 10M. Value is supplied as:

	nnnnnnn
or	nnnnnnnK
or	nnnnM
or	nG

This parameter only be overridden in the TBOPTV file.

VTSTEMP - Dynamically define the Subsystem Name

VTSTEMP is either YES or NO. YES allows the VTS Server to dynamically define to MVS the subsystem named by the VTSNAME parameter. NO requires that the subsystem named by the VTSNAME parameter be previously explicitly defined to MVS. The default value is YES.

This parameter only be overridden in the TBOPTV file.

Appendix B: tableBASE 6.0.0 and 6.0.1

This appendix covers information for customers who wish to use the Library Bridge and have already converted libraries to the Version 6 format using tableBASE 6.0.0 or 6.0.1. If you wish to retain these converted libraries, please continue reading this section. If you wish to reconvert these libraries from the original Version 5 libraries, please skip this appendix and use the method outlined in Chapter 4 “Library Conversion Utilities”on page 27.

tableBASE 6.0.0 and 6.0.1 used a different process for migrating tableBASE libraries than is provided in tableBASE 6.0.2. Two procedures, CVLB526B and CVLB526V, were provided to convert Version 5 libraries to the Version 6 format. CVLB526B was used to convert BDAM libraries; CVLB526V was used to convert VSAM libraries. The utility, DK1TLBFX, was used for converting from Version 6 to Version 5. These procedures invoke utilities DK15CNV1 and DKL15CNV2.

Libraries converted with tableBASE 6.0.0 or 6.0.1 are in a Version 6 Transition format (V6 TRANS), and require a further transformation to a Version 6 library format.

The new Library Conversion Utility, DK1TCNV, that is packaged with both Library Bridge and Release 6.0.2, replaces the library conversion utilities of earlier releases of Version 6. DK1TCNV and DK1TLCHK, replace utilities DK15CNV1, DK15CNV2 and DK1TLBFX.

To convert V6 TRANS libraries to V6 Libraries either use the DK1TCNV utility as described in Chapter 4 “Library Conversion Utilities”on page 27, or expand the library.

Note: Use DK1TLCHK (“The DK1TLCHK Utility” on page 32) to correctly identify the version of a library.

Appendix C: Distribution Datasets

This appendix lists the distribution datasets.

tableBASE Datasets

The installation CD/tape contains only the components that have been licensed. There are three partitioned datasets that are present on the distribution CD/tape, which are described below.

TBASE.CNTL

This PDS is referenced as*YOUR.PREFIX.BRIDGE*.CNTL (or whatever you name the JCL library) and contains two types of members:

1. JCL to install, customize, and test Library Bridge and all the components that have been licensed.

2. JCL to run Library Bridge utility programs.

Both types of members may require customization to conform to your particular installation standards.

Table C-1 lists the members of this dataset.

Table C-1: JCL Members

Member Name	Contains
AL113450	To assemble and link TB113450 if it is customized.
AL133450	To assemble and link TB133450 if it is customized. Present if the IMS interface is licensed.
AL11345V	To assemble and link CV113450, if it is customized. Present if the VTS interface is licensed.
AL273450	To assemble and link TB273450 if it is customized. Present if the CICS interface is supplied.

Table C-1: JCL Members (Continued)

Member Name	Contains
AUTHLIB	Copy VTS modules to an authorized library.
DK1TLCHK	JCL to execute a tableBASE library diagnostic program.
VALIDATE	JCL to verify that the installation of the MVS batch interface of Library Bridge is complete and correct. The JCL illustrates the use of the utility program TBEXEC and the tableBASE batch command executor TBDRIVER.
STARTVTS	JCL to start a VTS
VALIDVTS	JCL to verify that the installation of the VTS interface of Library Bridge is complete and correct. The JCL parallels the VALIDATE member, but executes against a VTS-TSR.
LOADPDS	Create PDSes from loaded sequential files.
LOADTAPE	Load distribution files from CD/tape.
CNV52BB	Convert a V5 library to a BDAM Bridge library.
CNV52BV	Convert a V5 library to a VSAM Bridge library.

TBASE.LOAD

This PDS is referenced as *YOUR.PREFIX.BRIDGE*.LOAD (or whatever you name the LOAD library) and contains all executable programs that comprise the licensed Library Bridge components.

Table C-2 lists the members of this dataset.

Table C-2: LOAD Members

Member Name	Notes
TBNUCL	
TBEXEC	alias MAINEXEC
TBDRIVER	alias TBTEST
TBPRNTL	
TBPRNTM	
TBROOT	
TBROOTI	only with IMS interface

Table C-2: LOAD Members (Continued)

Member Name	Notes
TBROOTC	only with CICS interface
TBASECIN	only with CICS interface
TBASECRM	only with CICS interface
TBASEV	only with the VTS interface
TBCALLV	only with the VTS interface
TBPOSTV	only with the VTS interface
TBRESAV	only with the VTS interface
TBCNTLV	only with the VTS interface
TBLOADV	only with the VTS interface
TBNUCLV	only with the VTS interface
TBROOTV	only with the VTS interface
DK1TCNV	
DK1TLCHK	
TBDRIVC	only if you are converting from tableBASE 5.0.2

TBASE.SRC

This PDS is referenced as*YOUR.PREFIX.BRIDGE*.SRC (or whatever you name the JCL library) and contains source code for programs that are used to customize the various installation parameters for use with Library Bridge components.

Table C-3 lists the members of this dataset.

Table C-3: TBASE.SRC Members

Member Name	Contains
TB113450	Default parameters for tableBASE to be run in batch.
TB133450	Default parameters for tableBASE to be run in IMS.
TB273450	Default parameters for tableBASE/CICS.
CV113450	Default parameters for the tableBASE VTS Interface to run in a VTS environment.

Appendix D: Return Codes

The following return codes are new or modified with the Library Bridge.

1. New: RC=34 "A paged table cannot be stored or copied to a Bridge Library"

2. Changed: RC=59. Old meaning "The library is pre-release 4.2, operation suppressed."; new meaning: "The library is pre-release 4.2 or post release 5.1; operation suppressed."