

TTUtility Component

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Unit

[TU](#)

Description

TTUtility is a Delphi component that implements the functionality in Borland's TUtility.DLL, the same DLL that comes with Paradox for Windows. The primary purpose of this component is to give the Delphi or Paradox developer an easy to implement tool for validating and fixing corrupt Paradox tables from inside delivered applications. The TUtility DLL on which this component is based will work on Paradox tables up to and including level 5 tables.

Select a table to verify by assigning a value to the [TableName](#) property. Assigning a value to TableName has two side effects. The [TblInfo](#) property is given value and the header of the table is verified. The TblInfo structure contains all kinds of valuable information about the table. Check TblInfo.bValidInfo and TblInfo.iRecords to get hints about the table header integrity.

You can also assign values to the [tErrTableName](#), [tBkUpTableName](#), [tKeyVTableName](#), and [tProbTableName](#) properties. These are all tables that Verify and Rebuild generate as a side effect of their execution.

Next you would assign a value to the [AltStructName](#) property. This is the name of a known good table that rebuild can borrow the structure from. After assigning the AltStructName It is also a good idea to check the [AltTblInfo](#).bValidInfo to make sure the alternate table does not have a corrupted header.

Assign a value to the [Password](#) property if the table has a master password.

Either drop the [Verify Status Dialog](#) and [Rebuild Status Dialog](#) Objects into your form or define the [onInfoVerify](#) and [onInfoRebuild](#) events to respond to the status messages from the verify and rebuild processes.

Finally, execute the [ExecuteVerify](#) public method. If errors are found, ExecuteVerify will create an error table with the name specified in the tErrTableName property. Check the [iErrorLevel](#) public property to the highest error level found in the error table. Use iErrorLevel, and the information in the TblInfo property to determine whether to use the Table's own structure or to borrow the structure from a similar table. To use the tables own structure run [ExecuteRebuild](#) passing it the value of the [pCurrentTblDesc Property](#) . To rebuild the table by borrowing a structure from a different table pass ExecuteRebuild the value in the [pAltTblDesc Property](#) .

You can even execute both the verify and rebuild in one step using the [ExecuteVerifyRebuild Method](#) .

See Also [TUtility API](#) , [Strategies for corrupt file recovery](#) and [TIdxUtl](#)

Properties

▶ Run-time only

🔑 Key properties



🔑 [iErrorLevel](#)

🔑 [Options](#)



🔑 [TblInfo](#)

[Pack](#)

▶ [AltTblInfo](#)

🔑 [Password](#)



🔑 [pCurrentTblDesc](#)

🔑 [TableName](#)



🔑 [pAltTblDesc](#)

Tag

[AtStructAlways](#)

[tBkUpTableName](#)

🔑 [AltStructName](#)

🔑 [tErrTableName](#)

[AlwaysRebuild](#)

[tKeyVTableName](#)

🔑 [CBActive](#)

[CBRebuildDialog](#)

[tProbTableName](#)

[CBVerifyDialog](#)

[Table](#)

Name

Methods

-  [ExecuteVerify](#)
-  [ExecuteRebuild](#)
-  [ExecuteVerifyRebuild](#)

Events

▶ Run-time only

🔑 Key properties

🔑 [OnInfoRebuild](#)

🔑 [OnInfoVerify](#)

🔑 [OnInfoVerReb](#)

Using TUtility Component

Here are 3 rules and one consideration you should be aware of when designing an application that incorporates the TUtility component.

RULES

1. Any table that will be verified or rebuilt using the TUtility component must be set to inactive (Active = False) at design time if you want to run the application under Delphi. For a discussion on the reasons see the [TUtility API](#) section later in this doc. If the table is active you will receive a run time error.
2. We highly recommend that you never run [ExecuteRebuild](#) on a table without first running [ExecuteVerify](#). ExecuteVerify discovers things about the table that ExecuteRebuild needs to know for a safe rebuild of the corrupt table.
3. If the table under consideration has a master password then it must be assigned correctly to the [Password](#) property. The TUtility component has no way of knowing if this password has been assigned incorrectly. In fact it will rebuild your table without the correct password, however, the resulting table will have no records in it. THIS DOES NOT RAISE AN ERROR. So... Make sure to assign the password correctly.

CONSIDERATION

Your application should deal with the side effect tables created by the Verify and Rebuild processes. These include the Error Table created by ExecuteVerify and the Problems and Key Violation Tables created by ExecuteRebuild. At some point the tables should be deleted (especially the Error Table). The first demo project automatically deletes the Error Table when it's done with it.

See Also [Strategies for corrupt file recovery](#)

iErrorLevel Property

Example

Applies To - [TTUtility Component](#) Readonly and run time only.

Declaration

property iErrorLevel : Word;

Description

The iErrorLevel property contains the status of the table being worked on. This property gets set whenever the [TableName](#) or [AltStructName](#) properties are assigned. This property is also set when the [ExecuteVerify](#) procedure is run. Use the value in iErrorLevel to make decisions on how best to proceed through the verify/rebuild process. This property along with the bValidInfo field in the [TblInfo](#) (or [AltTblInfo](#)) structures are keys to successful table maintenance.

Then possible values are;

- 0 : No structure problems. Everything's OK.
- 1 : Table is damaged but verification can continue.
- 2 : Table is damaged and verification stops.
- 3 : Table must be rebuilt manually with a user supplied table description.
- 4 : Table cannot be rebuilt. Use your last backup.

Note that the Table Repair utility in Paradox for Windows will allow for an auto-rebuild (structure is not specified by the user) on Level 2 errors. Experience shows that this is often a bad idea. The problem is that since the verify aborts with a level 2 before completion, there is no way to tell if there is a level 3 or 4 error beyond the point where verify aborts. We suggest that the user always specifies an alternate file structure on level 2 errors, especially if the bValidInfo field is false. (See the descriptions for [TblInfo](#) and [AltTblInfo](#)).

TblInfo Property

Applies To - [TTUtility Component](#) Readonly and run time only.

Declaration

property TblInfo: [TTableInfo](#); (ReadOnly)

Description

The TblInfo record contains useful information on the structure of the table being verified and/or rebuilt. TblInfo is filled with data whenever the [TableName](#) property is assigned. Here is a brief description of the fields that make up the TTableInfo Structure.

sTableType	:	Driver type - Should always be "Paradox"
	:	String[32]
	:	;
iFields	:	Word; Number of fields in Table
iRecSize	:	Word; Record size in bytes
iKeySize	:	Word; Key size (Primary key)
iIndexes	:	Word; Number of indexes on the table
iValChecks	:	Word; Number of val checks on the table
iRefIntChecks	:	Word; Number of Ref Integrity constraints on the table
iRestrVersion	:	Word; Restructure version number
iPasswords	:	Word; Number of Aux passwords on the table
bProtected	:	Bool; True if the table is protected by a password
sLangDriver	:	Language driver name
	:	String[32]
	:	;
iBlockSize	:	Word; Physical file blocksize in K
iRecords	:	Longint; Number of records in table
bValidInfo	:	Bool; Is the header information reliable.

The last to fields in this data structure need special mention. The bValidInfo field specifies whether TTUtility was able to read the header information reliably. If this value is False then the chances are good that the header is corrupt. The safest thing to do in this case is to borrow the table description from another good table rather than use the corrupt tables description

AltTblInfo Property

Applies To - [TTUtility Component](#) Readonly and run time only.

Declaration

property AltTblInfo: [TTableInfo](#);

Description

The AltTblInfo record contains useful information on the structure of the table being used to borrow a table description from. AltTblInfo is filled with data whenever the AltStructName property is assigned. The value of AltTblInfo.bValidInfo should be checked after assigning AltStructName. If the value is False do not use the [AltStructName](#) table to specify the structure used for the rebuild. Here is a brief description of the fields that make up the TTableInfo Structure.

sTableType	:	Driver type - Should always be "Paradox"
	:	String[32]
	:	;
iFields	:	Word; Number of fields in Table
iRecSize	:	Word; Record size in bytes
iKeySize	:	Word; Key size (Primary key)
iIndexes	:	Word; Number of indexes on the table
iValChecks	:	Word; Number of val checks on the table
iRefIntChecks	:	Word; Number of Ref Integrity constraints on the table
iRestrVersion	:	Word; Restructure version number
iPasswords	:	Word; Number of Aux passwords on the table
bProtected	:	Bool; True if the table is protected by a password
sLangDriver	:	Language driver name
	:	String[32]
	:	;
iBlockSize	:	Word; Physical file blocksize in K
iRecords	:	Longint; Number of records in table
bValidInfo	:	Bool; Is the header information reliable.

The last two fields in this data structure need special mention. The bValidInfo field specifies whether TTUtility was able to read the header information reliably. If this value is False then the chances are good that the header is corrupt and this table should probably not be used as a source for a table structure.

pCurrentTblDesc Property

Example

Applies To - [TTUtility Component](#) Readonly and run time only.

Declaration

property pCurrentTblDesc: pCRTblDesc

Description

Pass this value to [ExecuteRebuild](#) if you want to use the table specified in [TableName](#) to determine the structure of the rebuilt table. You can assign this value with the pointer to a CRTblDesc that you created yourself (Not Recommended). See the discussions in [ExecuteRebuild](#) for more information.

ALSO NOTE - The user should not destroy or modify the Table Desc structure that is passed back by pCurrentTblDesc it is to be looked at and passed to Rebuild table only.

ADVANCED NOTE - If you create and populate a pCRTblDesc structure yourself (not recommended) and assign it to TUtility's pCurrentTblDesc property it then becomes owned by the TUtility component. This means that you must not destroy it yourself. Any existing pCurrentTblDesc structure is destroyed (the memory is freed) when ever a new value is assigned or when the component itself is destroyed. If you destroy it yourself you run a good chance of GPFing your app.

ADVANCED The following describes the pCRTblDesc (Create Table Description) for rebuilding a table. This structure is also documented in the Borland Database Engine User's Guide. The CRTblDesc structure defines the general attributes of the table and supplies pointers to arrays of field, index, and other descriptors.

Field	Type	Description
szTblName	DBITBLNAME	Table name, including path.
szTblType	DBINAME	Driver type.
szErrTblName	DBIPATH	Name of the Error table created by Execute Verify (including path)
szUserName	DBINAME	Not currently used.
szPassword	DBINAME	Master password (if bProtected is TRUE).
bProtected	BOOL	TRUE if table is encrypted.
bPack	BOOL	If TRUE, specifies packing for the rebuild. Assigned by the Pack property
iFldCount	UINT16	The number of field descriptors supplied.
pcrFldOp	pCROpType	Not used by rebuild. Must be zero.
pfldDesc	pFLDDesc	An array of field descriptors.
ildxCount	UINT16	The number of index descriptors supplied.
pcrIdxOp	pCROpType	Not used by rebuild. Must be zero.
pidxDesc	pIDXDesc	An array of index descriptors.
iSecRecCount	UINT16	The number of security descriptors given.
pcrSecOp	pCROpType	Not used by rebuild. Must be zero.
psecDesc	pSECDesc	An array of security descriptors
iValChkCount	UINT16	The number of validity checks
pcrValChkOp	pCROpType	Not used by rebuild. Must be zero.
pvchkDesc	pVCHKDesc	An array of validity check descriptors.
iRintCount	UINT16	The number of referential integrity specifications.
pcrRintOp	pCROpType	Not used by rebuild. Must be zero.
printDesc	pRINTDesc	An array of referential integrity specifications.
iOptParams	UINT16	The number of optional parameters.
pfldOptParam	pFLDDesc	An array of field descriptors for optional parameters.
s		
pOptData	pBYTE	The values of optional parameters.

In order to populate this structure correctly you must also create pointers to the pfldDesc,

pIDXDesc, pSECDesc, pVCHKDesc and pRINTDesc. For information on these record structures refer to the DbTypes.Int file in your Delphi\Doc directory or to the BDE User's guide if you have it.

Also, be advised, that the last three fields of the structure mentioned above (iOptParams, pfldOptParams, pOptData) must contain information specific to the Paradox table that is to be rebuilt. The required information is not documented anywhere outside of Borland. We suggest that if you really must create and populate this structure yourself that you first populate it a few times by borrowing the structure from a known table and then study the data in the borrowed structure.

The authors of this component can not support technical questions relating to the manual populating of this structure.

pAltTblDesc Property

Example

Applies To - [TTUtility Component](#) Readonly and run time only.

Declaration

property pAltTblDesc: pCRTblDesc

Description

Pass this value to [ExecuteRebuild](#) if you want to use the table specified in AltStructName to determine the structure of the rebuilt table. The description returned in the pAltTblDesc represents the complete description of the table named in the [AltStructName](#) property.

This value is readonly. It exists only as a convenient way to specify a table to borrow a structure from for the rebuild process.

NOTE - The user should not destroy or modify the Table Desc structure that is passed back by pAltTblDesc it is to be looked at and passed to Rebuild table only. See [pCurrentTblDesc](#) for a description of the pCRTblDesc structure.

AltStructAlways Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property AltStructAlways: Boolean

Description

Set this value to true if you always want the table specified in AltStructName to determine the structure of therebuilt table. This is used only by [ExecuteVerifyRebuild](#).

AltStructName Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property AltStructName: TFileName

Description

Assign this property the name of the table to use as the structure for the rebuild. This should be a completely qualified file name including the path. Assigning a value to AltStructName has two side effects. The [AltTblInfo](#) property is given value and the header of the AltStructName table is verified. The values of [iErrorLevel](#) and AltTblInfo.bValidInfo should be checked after assigning a value to AltStructName.

AlwaysRebuild Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property AlwaysRebuild: Boolean

Description

Used by [ExecuteVerifyRebuild](#). If this property is true then the table mentioned in the [TableName](#) property is always rebuilt even when verify shows that it has no errors.

CBActive Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property CBActive : Boolean

Description

Set this value to False if you don't want the installed Callback functions activated. You make completely define the callbacks using [CBVerifyDialog](#) and [CBRebuildDialog](#) or [OnInfoVerify](#) and [OnInfoRebuild](#) and then choose to not use them at run time by setting this value to false. You would do this for performance reasons.

Testing has shown that turning the information callbacks on has an adverse effect on performance. The CBActive can be turned on or off at runtime. This is especially useful for creating programs that do multiple verifies and rebuilds and where there will be no one around to watch the gauges move anyway.

NOTE : Do not try to change CBActive from True to False from inside any of the onInfoXXXX events. CBActive must be set prior to [ExecuteVerify](#), [ExecuteRebuild](#) or [ExecuteVerifyRebuild](#).

CBRebuildDialog Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property CBRebuildDialog: TRebuildDlg

Description

Assign this the value of the TRebuildDlg component on your form. This is the easiest way to get status information during [ExecuteRebuild](#). If you do not want to use the canned TRebuildDlg component you may define your own status dialog by implementing the [OnInfoRebuild Event](#)

CBVerifyDialog Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property CBVerifyDialog: TVerifyDlg

Description

Assign this the value of the TVerifyDlg component on your form. This is the easiest way to get status information during [ExecuteVerify](#).

If you do not want to use the canned TVerifyDlg component you may define your own status dialog by implementing the [OnInfoVerify Event](#) .

Options Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property Options: TVerifyOptions

Description

This property specifies various behaviors of [ExecuteVerify](#). The default is all options are false. Here are the available options:

TU_Append_Error	Append errors to an existing error table
TU_No_Secondary	Bypass secondary indexes
TU_No_Warnings	Prevent warnings of secondary errors
TU_Header_Only	Verify table header only
TU_Dialog_Hide	Reserved for future expansion. Do not use
TU_No_Lock	Do not lock table being verified

If you are going to create an application that verifies a number of files in a batch, then you will want to set the TU_Append_Errors to TRUE unless you specify a different error table for each table in your batch.

Pack Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property Pack : Boolean

Description

The way this property is supposed to work is that if the Pack property equals TRUE then [ExecuteRebuild](#) packs the rebuilt table. If Pack is set to FALSE the records are not packed. This is part of the TUtility API and is exposed in the component for completeness. However, it is not supported by the current version of the TUtility.DLL. The records are always packed.

Password Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property Password : String

Description

Assign the master password of the table to this property. If the table is password protected then this property MUST be correctly assigned, otherwise, when [ExecuteRebuild](#) is run, the table will appear to be rebuilt but the resulting table will have no records in it. See the discussion later in this document under the TUtility API section for more information about passwords.

Passwords and the TUtility API are rather tricky. Since the TUtility does not use a standard BDE session it has no knowledge of what passwords are available. For this reason you must specify the table's master password in order for the ExecuteRebuild procedure to work correctly.

Warning, and very important, there is no way to check if the password entered is valid. If a table has a password assigned to it, ExecuteRebuild will run with no errors even if the wrong password (or no password) is entered. When this happens the resulting rebuild table will have no records. Note that this is even true in the Rebuild performed by Paradox for Windows. PFW will ask for a master password but if you key in an incorrect one there is no error message. The table is rebuild and the record count is zero.

The TUtility component offers some ways to insure that the correct password is entered. Here's the strategy. When the TableName property is assigned, as a side effect, it checks to see if a password is required for the table. If a password is required it checks TUtility's password property to see if it has been assigned. If no password as been assigned a message box asks the user to assign the password. Now with the password in hand, TUtility attempts to get an extended description of the table without opening a cursor on the table. If this is successful then TUtility's [TblInfo](#) record property will show a positive value in the iRecords field. It's a good bet that if iRecords is zero than the password is incorrect but it's still no guarantee since a corrupt table header can also return an iRecords count of zero even when the password is correct.

Of course you could always try to open the table but if the table is corrupt then this may not be possible. Remember that the TUtility component never opens a cursor on the table being worked on.

So the bottom line is, make sure the value assigned to the password property is correct.

Table Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property Table : TTable

Description

This property was added as an optional way of specifying the [TableName](#) . You can drop a TTable component into your form and then use this property to select that TTable component. Assigning this component automatically assigns a value to the TableName property. This may be easier than assigning the TableName property directly if the path name is very long.

Note that this property is completely optional and is ment only as a way of assisting in the assigning of the TableName property. Also not that using this method to assign Tablename uses slightly more resources than assigning TableName directly,

TableName Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property TableName : TFileName

Description

Assign this property the name of the table to be verified and/or rebuilt. This should be a completely qualified file name, including the path. Assigning a value to TableName has two side effects. The [TblInfo](#) property is given a value and the header of the table is verified. The values in [iErrorLevel](#) and TblInfo.bValidInfo should be checked after assigning a value to TableName.

Assigning a value to the [Table property](#) will automatically assign a value to the TableName property. Also assigning a value to TableName directly will clear the Table property.

tBkUpTableName Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property tBkUpTableName: TFileName

Description

Assign this property the name of the backup table created by ExecuteRebuild. The default is TableName + '_'. For example, if the TableName was CUSTOMER.DB then the backup name would be CUSTOME_.DB If no path name is specified then the table will be created in the same directory as [TableName](#) .

tErrTableName Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property tErrTableName : TFileName

Description

Assign this property the name of the Error Table to be created by [ExecuteVerify](#). The default is __TUERR.DB. If no path name is specified, the table will be created in whatever directory Delphi believes is your Private Directory (Session.PrivDirectory).

tKeyVTableName Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property tKeyVTableName: TFileName

Description

Assign this property the name of the key violation table created by [ExecuteRebuild](#). The default is KEYVIOL.DB. If no path name is specified, the table will be created in whatever directory Delphi believes is your Private Directory (Session.PrivDirectory).

tProbTableName Property

Applies To - [TTUtility Component](#) Read write, and both design and time only.

Declaration

property tProbTableName: TFileName

Description

Assign this property the name of the problems table created by [ExecuteRebuild](#). The default is PROBLEMS.DB. If no path name is specified, the table will be created in whatever directory Delphi believes is your Private Directory (Session.PrivDirectory).

ExecuteVerify Method

Example

Applies To - [TTUtility Component](#)

Declaration

procedure ExecuteVerify

Description

ExecuteVerify performs the verify step. At a minimum the [TableName](#) property must be set for this procedure to operate. Depending on how options are set, ExecuteVerify creates or appends to the table specified by the [tErrTableName](#) property. You can view this table for an in-depth analysis of the table's problems. On completion ExecuteVerify sets [iErrorLevel](#) to the highest error encountered. Use iErrorLevel and the value in [TblInfo.bValidInfo](#) to determine the best way to run [ExecuteRebuild](#).

The structure of the error table created by ExecuteVerify looks like this.

Field Name	Typ	Size	Description
Drive	A	2	Disk Drive
Directory	A	65	Path to the Table
Table Name	A	8	Paradox Table Name
Extension	A	4	Should always be .DB
Error Code	S		Code used to get the Error Message (Appendix C)
Error Level	S		Rating of error severity
Error Message	A	150	Textual description of error
Date	D		The table's file date
Time	T		The table's file time

The Error Level is the most important field since it rates the importance of the error. See the description of the [iErrorLevel](#) property. ExecuteVerify reports the highest value found in the Error Level field in the iErrorLevel property.

ExecuteRebuild Method

Example

Applies To - [TTUtility Component](#)

Declaration

Procedure ExecuteRebuild(pTableDesc : pCRTblDesc)

Description

ExecuteRebuild attempts to fix the table. It creates a backup of the original table in the table specified by the [tBkUpTableName](#) property. A problem table, [tProbTableName](#), and key violation table [tKeyVTableName](#) may also be created.

ExecuteRebuild's minimum requirement is that the [TableName](#) property be specified and that a value be passed in the method's pTableDesc parameter.

The pTableDesc parameter specifies a complete description of the table to be rebuilt. This table description can be created in any of three ways;

1. Use the value in the [pCurrentTblDesc](#) property which is the description of the table named in the TableName property.
2. Use the value in the [pAltTblDesc](#) property which is the description of the table named in the [AltStructName](#) property. (This is borrowing the structure from another table).
3. **(NOT RECOMMENDED)** The user can create the table description itself.. If this is what you want to do you must study and completely understand the CRTTblDesc. This is by far the most complicated record structure we have ever encountered and we highly recommend that you avoid attempting the creation of this structure from scratch.

Note, that once you pass this pointer to ExecuteRebuild it becomes "owned" by the TTUtility object. Do not attempt to destroy it yourself, TTUtility will take care of the destruction of this structure.

Recommendation - For the safest, most successful rebuilds we recommend that you pass [pCurrentTblDesc](#) as the parameter to ExecuteRebuild only when the [iErrorLevel](#) is 2 or less (see iErrorLevel above) and when [TblInfo.bValidInfo](#) is True. Otherwise, specify a table to borrow the structure from in [AltStructName](#) and use [pAltTblDesc](#) as the parameter for ExecuteRebuild.

ExecuteVerifyRebuild Method

Example

Applies To - [TTUtility Component](#)

Declaration

procedure ExecuteVerifyRebuild

Description

ExecuteVerifyRebuild combines the verify and rebuild processes into a single convenient procedure call. First, the table mentioned in the [TableName](#) property is verified. If the header is not damaged (TblInfo.bValidInfo = True) and the error level is less than 3 then the table's own structure is used for the rebuild, otherwise the table named in the [AltStructName](#) property is used. If [AltStructAlways](#) is true then the table named in the AltStructName property is always used to get the rebuild structure. The AltStructName property should always be assigned prior to executing this procedure.

If the [AlwaysRebuild](#) property is set to true then the table will always be rebuilt even it verify returns an iErrorLevel of zero. If AlwaysRebuild is false (the default) then the table is not rebuilt if the verify showed no table errors. **Note, it has been reported that the the verify portion of the TUtility.Dll can show no when there are errors that rebuild can fix.** We can not prove or disprove this claim. Also Verify will not report out of date secondary indexes. Use the [TIdxUtil](#) component to check and regenerate secondary indexes.

Use the companion [OnInfoVerReb](#) event plus [onInfoVerify](#) and [onInfoRebuild](#) to monitor and record the execution of this procedure.

OnInfoRebuild Event

Example

Applies To - TTUtility Component

Declaration

event OnInfoRebuild: TInfoRebuildEvent

Description

Define the OnInfoRebuild event if you want to create your own Rebuild Status Dialog box. The TInfoRebuildEvent looks like this.

```
TInfoRebuildEvent = procedure(  
    Sender: Tobject;           {Where the message came from}  
    RebuildCBRec: TRebuildCBData)      { Message to display }  
of object;
```

Where TRebuildCBData is

```
TRebuildCBData = record  
    iPercentDone    : Integer;           { Percentage done. }  
    sMsg            : String[128];      { Message to display }  
end;
```

If sMsg is blank then use the information in iPercentDone other us the information in sMsg.

NOTE : This is VERY important. DO NOT MAKE ANY DATABASE CALLS FROM THIS METHOD. This event is actually part of a BDE Callback response. The rules for Callback responses are clear. The BDE is not re-entrant, that means that you can not do anything here that would call the BDE. So.... No database calls. Just make pictures.

OnInfoVerify Event

Example

Applies To - [TTUtility Component](#)

Declaration

event OnInfoVerify: TInfoVerifyEvent

Description

Define the OnInfoVerify event if you want to create your own Verify Status Dialog box. The TInfoVerifyEvent looks like this.

```
TInfoVerifyEvent = procedure (  
    Sender: Tobject;           {Where the message came from}  
    VerifyCBRec: TVerifyCBData {The data to be acted on}  
) of object;
```

Where TVerifyCBData is

```
TVerifyCBData = record  
    PercentDone: word;           The Percent Completed  
    TableName: String[82];      Passed only with Process =  
    TUVerifyTableName  
    Process: TUVerifyProcess;   Changes with the various verify steps  
below.  
    CurrentIndex: word;         Increments with each secondary index  
checked.  
    TotalIndex: word;          Number of Secondary Indexes  
end;
```

and The TUVerifyProcess is

```
TUVerifyProcess = (  
    TUVerifyHeader,           Header is verified, PercentDone increments.  
    TUVerifyIndex,           Primary Index is verified, PercentDone  
increments.  
    TUVerifyData,           Primary Index Data is verified, PercentDone  
increments.  
    TUVerifySXHeader,       A Secondary Index Header verified, PercentDone  
incs.  
    TUVerifySXIndex,       A Secondary Index verified, PercentDone  
increments.  
    TUVerifySXData,       A Secondary Index data verified, PercentDone  
incs.  
    TUVerifySXIntegrity,   A Secondary Index integrity is verified. Ditto.  
    TUVerifyTableName       Passes the Table Name in TVerifyCBData.TableName  
);
```

You need to watch the process field to determine which gauge to adjust with the amount delivered in PercentDone.

NOTE : This is VERY important. DO NOT MAKE ANY DATABASE CALLS FROM THIS METHOD. This event is actually part of a BDE Callback response. The rules for Callback responses are clear. The BDE is not re-entrant, that means that you can not do anything here that would call the BDE. So.... No database calls. Just make pictures.

OnInfoVerReb Event

Example

Applies To - TTUtility Component

Declaration

event OnInfoVerReb: TInfoVerRebEvent;

Description

OnInfoVerReb sends textual messages back to your application as ExecuteVerifyRebuild runs. These messages are in addition to those sent by onInfoVerify and onInfoRebuild. The text messages sent by ExecuteVerifyRebuild and received in onInfoVerReb are general in nature and allow you to monitor the VerifyRebuild sequence. The TInfoVerRebEvent looks like this:

```
TInfoVerRebEvent = procedure (  
    Sender: TObject;  
    AMessage : String;  
    Process : TUVerRebProcess;  
    var Abort : Boolean) of object;
```

Where the Process field is

```
TUVerRebProcess = (TUVerifying, TURebuilding);
```

As ExecuteVerifyRebuild runs it sends general status information back to the application by firing onInfoVerReb. The status information arrives in the AMessage field. This information can be written to the screen or printer for later review.

The Process field indicates which process is running (verify or rebuild). You can abort onInfoVerReb by setting Abort to true.

Example

Use `iErrorLevel`, `pCurrentTblDesc` and `pAltTblDesc` to properly rebuild a table.

```
procedure TFormTUMain.ButtonRebuildClick(Sender: TObject);
begin
  TUtilityVerReb.AltStructName:= 'C:\Data\GoodInfo.DB';
  TUtility1.tBkUpTableName := 'C:\Data\BadInfo_.DB'
  TUtility1.tKeyVTableName := 'C:\Data\KyVInfo.DB'
  TUtility1.tProbTableName:= 'C:\Data\ProbInfo.DB'

  If (TUtility1.iErrorLevel < 3) then
    Tutility1.ExecuteRebuild(TUtility1.pCurrentTblDesc);
  else if (TUtility1.iErrorLevel < 4) then
    Tutility1.ExecuteRebuild(TUtility1.pAltTblDesc);
  else
    begin
      MessageDlg('BAD NEWS! The cannot be rebuilt.' + #10#13 +
        'Reload from backups.', mtInformation, [mbOK], 0);
      exit;
      {Can't rebuild so Bail out }
    end;
  MessageDlg('Table Successfully rebuild!', mtInformation, [mbOK], 0);
end;
```

Example

```
procedure TFormTUMain.ButtonVerifyClick(Sender: TObject);
begin
  TUtility1.TableName := 'C:\Data\BadInfo.DB';
  TUtility1.tErrTableName := 'C:\Data\ErrInfo.DB'
  TUtility1.ExecuteVerify;
  if TUtility1.ierrorLevel <> 0 then
  begin
    MessageDlg('The table is corrupt and must be repaired!',
              mtWarning, [mbYes, mbNo], 0) = mrYes then
    end
  else
  begin
    MessageDlg('GOOD NEWS!' + #10#13 + 'Header and Data are O.K.',
              mtInformation, [mbOK], 0);
  end;
end;
```

Example

```
procedure TFormBatchMain.ButtonFixAllClick(Sender: TObject);
begin
    TUtilityVerReb.TableName := 'C:\Data\BadInfo.DB';
    TUtilityVerReb.AltStructName:= 'C:\Data\GoodInfo.DB';
    TUtilityVerReb.tBkUpTableName := 'C:\Data\BadInfo_.DB'
    TUtilityVerReb.tErrTableName := 'C:\Data\ErrInfo.DB'
    TUtilityVerReb.tKeyVTableName := 'C:\Data\KyVInfo.DB'
    TUtilityVerReb.tProbTableName:= 'C:\Data\ProbInfo.DB'
    Try
        TUtilityVerReb.ExecuteVerifyRebuild;
    except
        {report the error to the log so it doesn't stop the process}
        on E:Exception do
            SendToLog(E.Message);
    end;
end;
```

Example

```
procedure TFormTUMain.TUtility1InfoRebuild(Sender: TObject;
  RebuildCBRec: TRebuildCBData);
begin
  with RebuildCBRec do
  begin
    if sMsg = '' then
      FormRebuildStatus.GaugeRebuild.Progress := iPercentDone
    else
      begin
        FormRebuildStatus.LabelNumPacked.Caption := sMsg;
        FormRebuildStatus.refresh;
      end;
  end;
end;
end;
```

Example

```
procedure TFormTUMain.TUtility1InfoVerify(Sender: TObject;
  VerifyCBRec: TVerifyCBData);
begin
  with VerifyCBRec do
  begin
    Case Process of
      TUVerifyTableName : FormVerifyStatus.LabelStatus.Caption := TableName;
      TUVerifyHeader : FormVerifyStatus.GaugeHeader.Progress := PercentDone;
      TUVerifyIndex : FormVerifyStatus.GaugeIndex.Progress := PercentDone;
      TUVerifyData : FormVerifyStatus.GaugeData.Progress := PercentDone;
      TUVerifySXHeader : FormVerifyStatus.GaugeHeaderIdx.Progress :=
PercentDone;
      TUVerifySXIndex : FormVerifyStatus.GaugeIndexIdx.Progress :=
PercentDone;
      TUVerifySXData : FormVerifyStatus.GaugeDataIdx.Progress :=
PercentDone;
      TUVerifySXIntegrity :
        begin
          FormVerifyStatus.GaugeIntegrity.Progress := PercentDone;
          FormVerifyStatus.LabelZeroOf.Caption := IntToStr(CurrentIndex);
          FormVerifyStatus.LabelOfZero.Caption := IntToStr(TotalIndex);
          FormVerifyStatus.refresh;
        end;
    end; {Case}
  end;
end;
```

Example

```
procedure TFormBatchMain.TUtilityRestInfoVerReb(Sender: TObject;  
  AMessage: String; Process: TUVerRebProcess; var Abort: Boolean);  
begin  
  SendToLog(AMessage);  
  if process <> CurProcess then  
  begin  
    Case Process of  
      TUVerifying :  
        begin  
          FormStatus.GroupBoxVerify.Font.Color := clRed;  
          FormStatus.GroupBoxRebuild.Font.Color := clBlack;  
        end;  
      TURebuilding :  
        begin  
          FormStatus.GroupBoxVerify.Font.Color := clBlack;  
          FormStatus.GroupBoxRebuild.Font.Color := clRed;  
        end;  
    end; {case}  
    FormStatus.GroupBoxVerify.refresh;  
    FormStatus.GroupBoxRebuild.refresh;  
    CurProcess := Process;  
  end;  
end;
```

TU Unit

The TU unit contains the declarations for the TTUtility component, as well as, the declarations for the associated fields. When you add a component declared in this unit to a form, the unit is automatically added to the uses clause of that form's unit. The following items are declared in the TU unit:

Components

[TTUtility](#)

Types

[ETUtilityError](#)

[TVerifyOption](#)

[TVerifyCBData](#)

[TInfoVerifyEvent](#)

[TRebuildCBData](#)

[TInfoRebuildEvent](#)

[TInfoVerRebEvent](#)

[TTableInfo](#)

To see a listing of items declared in this unit including their declarations, use the ObjectBrower.

ETUtilityError Type

Unit

TU

Declaration

```
ETUtilityError = class(Exception)
```

Description

Specialized TUtility error class that knows about the errors and error messages supported in the TUtility API.

TVerifyOption Type

Unit

TU

Declaration

```
TVerifyOption = (  
  vTU_Append_Errors,  
  vTU_No_Secondary,  
  vTU_No_Warnings,  
  vTU_Header_Only,  
  vTU_Dialog_Hide,  
  vTU_No_Lock);
```

also

```
TVerifyOptions = Set of TVerifyOption;
```

Description

Type used by the Tutility.[Options](#) property.

TU_Append_Error	Append errors to an existing error table
s	
TU_No_Secondar	Bypass secondary indexes
y	
TU_No_Warnings	Prevents warnings of secondary errors
TU_Header_Only	Verify table header only
TU_Dialog_Hide	Reserved for future expansion. Do not use
TU_No_Lock	Do not lock table being verified

TVerifyCBData Type

Unit

[TU](#)

Declaration

```
TVerifyCBData = record
  PercentDone: word;
  TableName: String[82];
  Process: TUVerifyProcess;
  CurrentIndex: word;
  TotalIndex: word;
end;
```

where

```
TUVerifyProcess = (TUVerifyHeader, TUVerifyIndex, TUVerifyData, TUVerifySXHeader,
  TUVerifySXIndex, TUVerifySXData, TUVerifySXIntegrity,
  TUVerifyTableName);
```

Description

The TVerifyCBData record is one of the parameters of the [TInfoVerifyEvent](#) which is the type of the TUtility.[OnInfoVerify](#) event.

PercentDone	The Percent Completed
TableName	Passed only with Process = TUVerifyTableName
Process	Changes with the various verify steps below.
CurrentIndex	Increments with each secondary index checked.
TotalIndex	Number of Secondary Indexes

The Process field of TVerifyCBData is of type TUVerifyProcess its members are described as

TUVerifyHeader	Header is verified, PercentDone increments.
TUVerifyIndex	Primary Index is verified, PercentDone increments.
TUVerifyData	Primary Index Data is verified, PercentDone increments.
TUVerifySXHeader	A Secondary Index Header verified, PercentDone incs.
TUVerifySXIndex	A Secondary Index verified, PercentDone increments.
TUVerifySXData	A Secondary Index data verified, PercentDone incs.
TUVerifySXIntegrity	A Secondary Index integrity is verified. Ditto.
TUVerifyTableName	Passes the Table Name in TVerifyCBData.TableName

TInfoVerifyEvent Type

Unit

[TU](#)

Declaration

```
TInfoVerifyEvent = procedure(  
    Sender: TObject;  
    VerifyCBRec: TVerifyCBData) of object;
```

Description

The [OnInfoVerify](#) event is defined as type TInfoVerifyEvent. The Sender field specifies the object that fired the event. VerifyCBRec is of type [TVerifyCBData](#) and contains all the information needed to create RAD status displays for the verify process.

TRebuildCBData Type

Unit

[TU](#)

Declaration

```
TRebuildCBData = record
  iPercentDone    : Integer;
  sMsg            : String[128];
end;
```

Description

TRebuildCBData defines the type of the information record passed as one of the parameters in in [OnInfoRebuild](#) event which is of type [TInfoRebuildEvent](#).

PercentDone contains the percentage complete of the data move part of the rebuild process while sMsg contains a verbal description of the pack part of the rebuild process.

TInfoRebuildEvent Type

Unit

[TU](#)

Declaration

```
TInfoRebuildEvent = procedure(  
    Sender: TObject;  
    RebuildCBRec: TRebuildCBData) of object;
```

Description

The TInfoRebuildEvent type is used to define the [OnInfoRebuild](#) event. [RebuildCBRec](#) contains the information needed to display RAD status dialogs.

TInfoVerRebEvent Type

Unit

TU

Declaration

```
TInfoVerRebEvent = procedure(  
    Sender: TObject;  
    AMessage : String;  
    Process : TUVerRebProcess;  
    var Abort : Boolean) of object;
```

where Process is defined as

```
TUVerRebProcess = (TUVerifying, TURebuilding);
```

Description

TInfoVerRebEvent is the type of the [ExecuteVerifyRebuild](#) event.

As ExecuteVerifyRebuild runs it sends general status information back to the application by firing onInfoVerReb. The status information arrives in the AMessage field. This information can be written to the screen or printer for later review.

The Process field indicates which process is running (verify or rebuild). You can abort onInfoVerReb by setting Abort to true.

TTableInfo Type

Unit

TU

Declaration

```
TTableInfo = Record
  sTableType      : String[32];
  iFields         : Word;
  iRecSize        : Word;
  iKeySize        : Word;
  iIndexes        : Word;
  iValChecks      : Word;
  iRefIntChecks   : Word;
  iRestrVersion   : Word;
  iPasswords      : Word;
  bProtected      : Bool;
  sLangDriver     : String[32];
  iBlockSize     : Word;
  iRecords        : Longint;
  bValidInfo     : Bool;
end;
```

Description

TTableInfo is the type of TUtilities [TblInfo](#) and [AltTblInfo](#) properties.

sTableType	:	Driver type - Should always be "Paradox"
	String[32]	
	;	
iFields	:	Number of fields in Table
iRecSize	:	Record size in bytes
iKeySize	:	Key size (Primary key)
iIndexes	:	Number of indexes on the table
iValChecks	:	Number of val checks on the table
iRefIntChecks	:	Number of Ref Integrity constraints on the table
iRestrVersion	:	Restructure version number
iPasswords	:	Number of Aux passwords on the table
bProtected	:	True if the table is protected by a password
sLangDriver	:	Language driver name
	String[32]	
	;	
iBlockSize	:	Physical file blocksize in K
iRecords	:	Number of records in table
bValidInfo	:	Was the header information reliable.

TUtility API

The TTUtility component implements the functionality of Borland's TUtility.DLL through the function made public by the published TUtility API. If you would like a copy of the API then download the TUTILITY.ZIP file found in the Borland Tools forum on CompuServe. The following are some observations about the Tutility API that we made during the development of this component.

BDE Sessions vs. TUtility Sessions

The TUtility API does not use the standard BDE session. In fact the API supports it's own specialized session. This session has no knowledge of the things that are associated with a typical BDE session, like aliases for example. This does not mean that you have no access to BDE session information while working with the TTUtility component. You can still access the global session variable as long as the DB unit is referenced in your uses clause. Just bear in mind that TTUtility itself knows nothing about session. You do not need to worry about the TUtility session since it has been completely encapsulated into the component.

The TUtility API also does all its table verification and rebuilding without ever opening a BDE cursor on the table. This is a requirement for rebuild since if the table is corrupted no cursor could be opened in any case.

Once again. The TUtility component never opens a cursor on the table being worked on. Any verify/rebuild functionality that you build into your application must insure that the table to be worked has its active property set to false and that this property remain false while you use the TUtility's executeXXXX methods.

Passwords

Passwords and the TUtility API are rather tricky. Since the TUtility does not use a standard BDE session it has no knowledge of what passwords are available. For this reason you must specify the table's master password in order for the ExecuteRebuild procedure to work correctly.

WARNING & VERY IMPORTANT, there is no way to check if the password entered is valid. If a table has a password assigned to it, ExecuteRebuild will run with no errors even if the wrong password (or no password) is entered. When this happens the resulting rebuild table will have no records. Note that this is even true in the Rebuild performed by Paradox for Windows. PFW will ask for a master password but if you key in an incorrect one there is no error message. The table is rebuilt and the record count is zero.

The TUtility component offers some ways to insure that the correct password is entered. Here's the strategy. When the TableName property is assigned, as a side effect, it checks to see if a password is required for the table. If a password is required it checks TUtility's password property to see if it has been assigned. If no password has been assigned a message box asks the user to assign the password. Now with the password in hand, TUtility attempts to get an extended description of the table without opening a cursor on the table. If this is successful then TUtility's TableInfo record property will show a positive value in the iRecords field. It's a good bet that if iRecords is zero then the password is incorrect but it's still no guarantee since a corrupt table header can also return an iRecords count of zero even when the password is correct.

Of course you could always try to open the table but if the table is corrupt then this may not be possible. Remember that the TUtility component never opens a cursor on the table being worked on.

So the bottom line is, make sure the value assigned to the password property is correct.

Active Tables at Design Time

Another side effect of the TUtilities independent session is that it does not recognize a

table being made inactive (Active := False) at run time. **Note, this limitation only applies when trying to run an application inside the Delphi environment.**

In fact, the TUtility component sees Delphi design time as being a separate application that has the table it wants to work on open. This is unfortunate because it means that you **must** insure that no table that could possibly be run against executeVerify or ExecuteRebuild be set to active at design time. For example, you cannot set a table to active at design time and then set it to inactive at run time prior to running executeVerify. The problem is that the TUtility API has no knowledge of the DBE session so it does not see the table go inactive at run time. It still believes the table is open and you will get a "Table Busy" error message. So.... you must insure that all tables in an application that use the TUtility API must have there active property set to FALSE at design time.

This requirement is only true when you run your application under Delphi. The problem does not exist when running the compiled executable application alone outside the Delphi environment. Also there is no problem making a table active at run time. In fact, as long as the table starts off as Active = FALSE, then active can be set to TRUE, have something done to it, set back to FALSE and have executeVerify run against it!

The Rule is only that it must start off inactive if you want to test the verify/rebuild functionality inside the Delphi environment.

Strategies for corrupt file recovery

Creating an Environment for the Painless recovery of Table Corruption

Over the years, TUtility, in its various forms, has probably created more forum and seminar discussion than probably any other single aspect of the Paradox database system. Certainly corruption and lost data tends to be a loud issue.

Data corruption **does** seem to just happen. Probably the biggest reason is desktops or servers being turned off or rebooted while some table activity is going on. Often there is no apparent reason and often the data corruption can go on for a long period of time before anyone notices. The one thing that you can be sure of is that data corruption **will** eventually happen.

Creating an environment that allows you to recover from data corruption quickly, easily and with minimum loss of data is really very straight forward. Just follow three rules:

Rule #1 - Backup your files regularly and keep a number of iterations of the backups.

While this rule is obvious it still needed to be said. Going to a non-corrupt backup is sometimes the only way you have of recovering from a badly damaged table. If ExecuteVerify reports a level 4 error in [iErrorLevel](#) then you are SOL unless you have a recent (and good) backup.

Rule #2 - For every table in your database keep an empty clone of it stored in a separate directory and on removable disk.

As mentioned earlier, the safest way to rebuild a table is to borrow the tables structure from another identical table which is known to be good. The official word is that the TUtility.DLL can rebuild a table using its own structure as long as the iErrorLevel is less than 3. While this is the official word there are a number of users out there who would disagree based on experience. So, whenever possible rebuild tables using a borrowed structure from a known good clone.

Note that "empty tables" is really not quite correct. The tables in your "borrow structure" directory should actually have at least one dummy record in each. The reason for this is that for some reason the table repair DLLs (TUTILITY.DLL and TUTIL32.DLL) believe that an empty table is a corrupt table.

Rule #3 - Verify all your tables on a regular basis.

The Paradox world is littered with stories of corrupt tables that turned out to also be corrupt on the last backup, on the backup before that. In fact, we heard one story of a shop that went back to its year end backup (9 months old) and discovered that the table in question was corrupt even then. The solution is simple: verify all the tables in your database on a regular basis.

Deciding How to Rebuild a Table

The decision on how to rebuild a table can be a little complicated. By far the simplest (and safest) solution is to not make the decision at all and to always rebuild the table using an alternate or borrowed table structure.

Having said that, here are the decision making rules if you want to make a decision.

Check the [iErrorLevel](#) property after [ExecuteVerify](#) is run. If iErrorLevel is less than 3 then the table is a good candidate for a rebuild using its own structure. The possibly of a successful rebuild goes down if the [TblInfo.bValidInfo](#) value is FALSE and/or the [TblInfo.iRecord](#) shows a value of zero when you know the table has records in it. But even then you might be OK.

What to do when you have a Level 4 Error and no table to borrow the structure from If this happens then you are still probably OK it's just that you need to do a little more work. You need to create a table using either Paradox or the Database Desktop. This table must be exactly the same structure as the corrupt table. If you don't know the structure then you are out of luck. Once you have created this table you can use it as the alternate structure table and borrow its structure to rebuild the corrupt table.

Support Etc.

TTUtility was created by Out & About Productions. We provide support for this component by e-mail, FAX., and snail mail.

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: San Diego, CA 92126

Disclaimers and Legal Stuff.

We really hate disclaimers but in the case of this component we feel it is absolutely necessary. The TUtility API and this component on which it is based are very powerful and can make your file maintenance tasks much easier. However, along with this power comes great potential for disaster.

We have studied the TUtility API in depth and have learned about a number of its quirks. All that we have discovered is documented here. We realize that the documentation is lengthy, but we highly recommend that you read it from front to back. If you follow the guidelines documented here you should be able to easily and successfully build applications that incorporate verify and rebuild functionality. We have tested the component both in house and in beta test, but this

testing is still a far cry from understanding all the different things that can happen to a file in the real world. So... here's the disclaimer.

Use of this product is at your own risk. Neither Out & About Productions or Borland International is responsible for any damage to your data as a result of using this component (TTUtility) or the underling TUtility.DLL

The TUtility.DLL is a unsupported product from Borland International. Borland International has made the TUtility.DLL (included with this product) freely redistributable with an application developed with the Borland Database Engine.

Along with the TUtility.DLL you may distribute any application that includes the TTUtility component and supporting components with no additional royalties beyond your initial license registration fee.

If you use the TTUtility component to develop an application where you also deliver the application's source then this is considered an additional license and the receiving party must license a copy of TTUtility from Out & About Production.

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TIdxUtl Component

[Properties](#) [Methods](#) [Events Support Etc.](#)

The TIdxUtl component was added to the TUtility component set to give the Delphi application developer a simple way to validate and update Paradox table indexes. With TIdxUtl you can check to see if the indexes on a Paradox table are up to date and then if they are out of date the component can regenerate the index(es). This component was added for completeness of the component set. The TUtility.Dll does not check for out of date indexes so this component was added to fill the gap.

To use TdxUtl to check and regen a tables index you need to assign a table to the [TableName](#) property and assign the [Password](#) property if the table has a master password. Then run [CheckIndexes](#) to determine if the indexes are up to date. If indexes are found to be out of date run [RegenIndex](#) to regenerate the indexes. You can use the [onInfoldxCheck](#) and [onInfoldxRegen](#) events to monitor the progress.

This component is especially useful in situations where file servers or work stations are rebooted while table access is in progress. Often this does not cause table corruption however it often causes maintained indexes to become out of date. You can also use this component with tables that have non-maintained indexes. Use TIdxUtl with the TUtility component for a complete table maintenance solution.

The TIdxUtl component does not use the TUtility.DLL. All calls access only are made directly the Borland Database Engine only.

Since TIdxUtl does not use the TUtility.DLL you could develop an application without the table verify and repair functionality but with index checking and regenerating and not worry about including TUtility.DLL as a distribution file.

See Also [TUtility Component](#)

Properties

▶ Run-time only

🔑 Key properties

🔑 Password

🔑 RegenAll

Table

🔑 TableName

Methods

(New topic text goes here.)

- ▶ [CheckIndexes](#)
- ▶ [RegenIndex](#)

Events

- ▶ Run-time only
- ▶ Key properties
 - ▶ [onInfoldxCheck](#)
 - ▶ [onInfoldxRegen](#)

Password Property

Applies To - [TIdxUtl](#)

Declaration

property Password : String;

Description

If the table has a master password it must be specified in this property otherwise [CheckIndexes](#) and [RegenIndex](#) will not run.

RegenAll Property

Applies To - [TIdxUtil](#)

Declaration

property RegenAll : Boolean

Description

Set this property to TRUE if you want [RegenIndex](#) to regenerate all indexes, including the indexes that are up to date.

Table Property

Applies To - [TIdxUtl](#)

Declaration

property Table : TTable;

Description

This property was added as an optional way of specifying the [TableName](#). You can drop a TTable component into your form and then use this property to select that TTable component. Assigning this component automatically assigns a value to the TableName property. This may be easier than assigning the TableName property directly if the path name is very long.

Note that this property is completely optional and is meant only as a way of assisting in the assigning the TableName property. Also note that using this method to assign Tablename uses slightly more resources than assigning TableName directly,

TableName Property

Applies To - [TIdxUtl](#)

Declaration

```
property TableName : TFileName;
```

Description

Assign this property the name of the table to be checked and/or regenerated. This should be a completely qualified file name, including the path.

CheckIndexes Method

Example

Applies To - TIdxUtil

Declaration

function CheckIndexes : Boolean;

Description

Execute CheckIndexes from your application to perform the check of the table identified in the TableName property. CheckIndexes examines the information stored in the tables header to determine if the index is out of date. Define an onInIdxCheck event to receive status information as the CheckIndexes process runs.

If CheckIndexes finds that any of the Table's indexes are out of date then it returns FALSE. If all indexes are up to date then TRUE is returned.

If the table is password protected then the Password property must be assigned, otherwise you will receive a run time error.

RegenIndex Method

Example

Applies To - TIdxUtil

Declaration

procedure RegenIndex

Description

Execute RegenIndex from your application to regenerate out of date indexes.

If the RegenAll property is set to FALSE then only the indexes that are out of date are regenerated. If RegenAll is TRUE than all indexes are regenerated. You can also control which indexes are regenerated by defining the onInIdxRegen event.

Note : The Borland Database Engine User's Guide states, "The effect of regenerating a maintained index is that it becomes more efficient and compact. (Frequent updates can fragment an Index)". pp277.

So... it a good idea to periodically regenerate all your indexes even if CheckIndexes shows all indexes are up to date.

If the table is password protected then the Password property must be assigned, otherwise you will receive a run time error.

onInfoldxCheck Event

Example

Applies To - [TIdxUtil](#)

Declaration

property onInfoldxCheck : TInfoldxCheckEvent

Description

The onInfoldxCheck event reports information about the [CheckIndexes](#) process as it runs. The TInfoldxCheckEvent event is defined as:

```
TInfoldxCheckEvent = procedure(  
    Sender: TObject;  
    IndexName : String;  
    IsUptoDate : Boolean) of object;
```

Where IndexName reports the name of the index being checked and IsUptoDate reports TRUE if the index is up to date and FALSE if the index is out of date.

onInfoldxRegen Event

Example

Applies To - [TIdxUtl](#)

Declaration

property onInfoldxRegen : TInfoldxRegenEvent

Description

The onInfoldxRegen event reports information about the [RegenIndex](#) process as it runs. You can also use the onInfoldxRegen event to selectively regenerate indexes in the selected table. The TInfoldxRegenEvent is defined as:

```
TInfoldxRegenEvent = procedure(  
    Sender: TObject;  
    IndexName : String;  
    IsUptoDate : Boolean;  
    var Skip : Boolean) of object;
```

Where IndexName is the name of the index to be regenerated. IsUptoDate reports TRUE if the index is up to date and FALSE if the index is out of date.

Use Skip to selectively regenerate indexes. If you set Skip to FALSE then the index will be regenerated even if it is already up to date. Set Skip to TRUE if you do not want the index regenerated. Skip has default values that will apply if you do not set its value. If the IsUptoDate parameter is TRUE then the default value for Skip is TRUE. If IsUptoDate is FALSE then the default value for Skip is FALSE.

Example

```
procedure TFormIndxProjMain.ButtonCheckIndexesClick(Sender: TObject);
begin
    if not IdxUtl1.CheckIndexes then
        MessageDlg('Index(es) are out of date and should be regenerated.',
            mtWarning, [mbOk], 0);
end;
```

Example

```
procedure TFormIndxProjMain.ButtonRegenIndexesClick(Sender: TObject);  
begin  
    IdxUtl1.RegenIndex;  
end;
```

Example

```
procedure TFormIndxProjMain.IdxUtl1InfoIdxCheck(Sender: TObject;  
    IndexName: String; IsUptoDate: Boolean);  
begin  
    if IsUptoDate then  
        SendToLog('Index ' + IndexName + ' is up to date.')  
    else  
        SendToLog('INDEX ' + Uppercase(IndexName) + ' IS OUT OF DATE.');
```

end;

Example

```
procedure TFormIndxProjMain.IdxUtl1InfoIdxRegen(Sender: TObject;
  IndexName: String; IsUptoDate: Boolean; var Skip: Boolean);
begin
  if IsUptoDate then
  begin
    if MessageDlg(IndexName + ' is not out of date do you want to regenerate
it anyway?',
      mtInformation, [mbYes,mbNo], 0) = mrYes then
    begin
      Skip := False;
      SendToLog(IndexName + ' is being regenerated.');
```

```
    end
    else
    begin
      Skip := True; {this line is not necessary cause Skip is true by
default}
      SendToLog(IndexName + ' not out of date and not being regenerated.');
```

```
    end;
  end
  else
  begin
    Skip := False; {this line is not necessary cause Skip is false by
default}
    SendToLog(IndexName + ' is being regenerated.');
```

```
  end;
end;
```

TRepairDialog Component

[Properties](#) [Methods](#) [Support Etc.](#)

The TRepairDialog component gives you a fast and easy way to implement to implement Paradox table verify and repair in your application.

The component wrapper is found in the TRepDlg unit and the form itself is found in the TRepForm unit and dfm files.

Great care has been taken to make the Repair Dialog as flexible as possible. Single or multiple table repair is completely supported along with the ability to deliver either a simple "one click" solution or a power user "do it all" solution.

Note the the source for the TRepForm has been included in the Batch demo directory (incase you are interested).

See Also [Using TTableRepair Component](#)

Properties

- ▶ Run-time only
- ▶ Key properties
 - ▶ [SourceDBName Property](#)
 - ▶ [BorrowDBName Property](#)
 - ▶ [DlgOptions Property](#)
 - ▶ [CallBackActive Property](#)
 - ▶ [TableList Property](#)
 - ▶ [BorrowRebuildOnly Property](#)

Methods



- ▶ Execute Method

Using TRepairDialog Component

Use the [Execute](#) method to display the Dialog box.

The rest of the properties are completely optional and exist so you can customize the look and feel of the dialog box. Specifically you may choose to limit the user ability to do anything but push the verify and repair buttons or you can leave everything enabled and visible to provide a full featured batch verify and repair tool.

Use the [DlgOptions Property](#) to show or hide, disable or enable the various parts of the dialog box.

The [SourceDBName Property](#) and [BorrowDBName Property](#) let you specify before hand the databases used. Specifying these before hand and then hiding those elements in the dialog box makes the dialog more specific to your application.

Use the [TableList Property](#) to pre-select the table to be checked. Here again you can use the DlgOptions property to then hide parts of the dialog limiting the end users choices.

The [CallBackActive Property](#) and [BorrowRebuildOnly Property](#) are also useful in customizing the dialog to fit your applications specific needs.

See Also [TRepairDialog Component](#)

Execute Method

Typically you will run this method from an onClick method in either a menu or a button. It displays the modal Table repair dialog box.

See Also [TRepairDialog Component](#)

SourceDBName Property

The SourceDBName property lets you pre-specify the database that contains the tables to be verified and or repaired. This information can also be entered at run time by filling in the combobox labeled "Source DB".

See Also [TRepairDialog Component](#)

BorrowDBName Property

BorrowDBName property lets you pre-specify where to borrow the table structures from in case a rebuild is necessary. This information can also be entered at run time by filling in the combobox labeled "Borrow Structure DB".

See Also [TRepairDialog Component](#)

DlgOptions Property

The DlgOptions property is the key to making the dialog box as simple or as powerful as your users require. Use this property to show, hide, enable or disable the various parts of the dialog.

The various options are defined in the TRDOptions data type;

```
TRDOption = (rdDBCombosEnabled,  
             rdDBCombosVisible,  
             rdCheckBoxEnabled,  
             rdCheckBoxVisible,  
             rdSourceListEnabled,  
             rdSourceListVisible,  
             rdSelectBtnsVisible,  
             rdExceptListVisible,  
             rdVerifyOnlyBtnVisible,  
             rdViewErrosBtnVisible,  
             rdVerRebBtnVisible,  
             rdRebuildOnlyVisible,  
             rdSaveBatchVisible,  
             rdFileInfoVisible,  
             rdGuagesVisible,  
             rdLogVisible );
```

where each member of the set determines the look and feel as follows;

rdDBCombosEnabled	Enable/Disable the comboboxs labled "Source DB" and "Borrow Structure DB".
rdDBCombosVisible	Show/Hide the comboboxs labled "Source DB" and "Borrow Structure DB".
rdCheckBoxEnabled	Enable/Disable the "Only Rebuild ... " Checkbox.
rdCheckBoxVisible	Show/Hide the "Only Rebuild ... " Checkbox.
rdSourceListEnabled	Enable/Disable the listbox labled "Select Tables to verify and rebuild ...".
rdSourceListVisible	Show/Hide the listbox labled "Select Tables to verify and rebuild ...".
rdSelectBtnsVisible	Show/Hide the buttons that move the tables between the list boxes.
rdExceptListVisible	Show/Hide the list labled "Tables missing from the Borrow Structure DB".
rdVerifyOnlyBtnVisible	Show/Hide the button labled "Verify Only".
rdViewErrosBtnVisible	Show/Hide the button labled "View Error Table".
rdVerRebBtnVisible	Show/Hide the button labled "Verify & Rebuild".
rdRebuildOnlyVisible	Show/Hide the force rebuild button.
rdSaveBatchVisible	Show/Hide the button labled "Rebuild".
rdFileInfoVisible	Show/Hide the file status information (Number or Records, Passwords, etc.).
rdGuagesVisible	Show/Hide the status guages.
rdLogVisible	Show/Hide the event log window.

See Also [TRepairDialog Component](#)

CallBackActive Property

Some times you just don't want to see all those status guages spinning around. You can turn them off by setting the CallBackActive property to false. Setting CallBackActive to false also improves performance.

See Also [TRepairDialog Component](#)

TableList Property

The dialog box's TableList property lets you pre-specify which table in the source database should be checked. The tables listed here will be preselected in the table list when the dialog box is first activated.

See Also [TRepairDialog Component](#)

BorrowRebuildOnly Property

The BorrowRebuildOnly property pre-specifies if a table can be rebuilt without another table to borrow the structure from. Its always a good idea to always borrow the structure of a known good table. This property can be changed by the user at runtime by checking or unchecking the checkbox labeled "Only Rebuild if a matching table is in the Borrow Structure DB".

See Also [TRepairDialog Component](#)

