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Preface

The INFORMIX-OnLine Conversion Guide is a complete guide to converting an INFORMIX-TURBO database server to INFORMIX-OnLine or converting an older INFORMIX-OnLine database server to a newer version.

You should have INFORMIX-TURBO and/or INFORMIX-OnLine database administration experience and a basic familiarity with SQL (Structured Query Language). The INFORMIX-SQL language is described in the INFORMIX-SQL Reference Manual (prior to 5.x INFORMIX-OnLine) and in a set of manuals called The Informix Guide to SQL: Tutorial and The Informix Guide to SQL: Reference.

Summary of Chapters

The INFORMIX-OnLine Conversion Guide includes the following chapters:

- Chapter 1, “Converting an Existing INFORMIX-TURBO System to INFORMIX-OnLine,” provides the steps required to convert an existing INFORMIX-TURBO database server to INFORMIX-OnLine.
- Chapter 3, “Questions and Answers,” provides answers to commonly asked questions regarding the conversion process.
Introduction

The INFORMIX-OnLine Conversion Guide is a complete guide to converting
INFORMIX-TURBO systems to INFORMIX-OnLine or converting older
INFORMIX-OnLine systems to newer INFORMIX-OnLine systems.

How to Use This Guide

This guide assumes you are familiar with the INFORMIX-TURBO
Administrator’s Guide and/or the INFORMIX-OnLine Administrator’s Guide.

Documentation Conventions

For the remainder of this document, references to INFORMIX-TURBO and
INFORMIX-OnLine will apply to the following product versions:

INFORMIX-TURBO version(s): 1.10.0x
INFORMIX-OnLine version(s): 4.x, 5.x

References to the INFORMIX-TURBO and INFORMIX-OnLine
documentation appear in the following format:

[ref Turbo:A] References to Turbo:A indicate the INFORMIX-TURBO
Administrator’s Guide. References to Turbo:P indicate the
INFORMIX-TURBO Programmer’s Guide.

[ref OnLine:A] References to OnLine:A indicate the INFORMIX-OnLine
Administrator’s Guide. References to OnLine:P indicate the

[ref OnLine5] References to OnLine:5 indicate the 5.0 INFORMIX-OnLine
Administrator’s Guide.
Typographical Conventions

The INFORMIX-OnLine Conversion Guide uses a standard set of conventions to introduce new terms, illustrate displays, describe command syntax, and so forth.

The following typographical conventions are used throughout the manual:

**KEYWORD** You must spell a word in capital letters as shown. However, you can use lowercase letters when entering it.

**variable** A word in italics represents a value that you must supply.

**boldface** Database names, table names, column names, filenames, utilities, and other similar terms are printed in boldface.

**computer** Information that you enter is printed in a computer typeface.

The documentation also includes illustrations that show what you see on the screen as you use the Conversion Guide. Information that the Conversion Guide displays and information that you enter are printed in a computer typeface. All keywords are shown in uppercase letters for ease of identification.

Ensuring Your Success

To ensure your success, we have detailed the steps needed to complete the conversions. If you require assistance with these procedures, please contact your local Customer Services Engineer or the Informix Technical Support Department in Menlo Park, California, at (800) 274-8184.
Converting an Existing INFORMIX-TURBO Database Server to INFORMIX-OnLine

This chapter describes the 12-step conversion of your existing INFORMIX-TURBO system to INFORMIX-OnLine. If you are converting an existing INFORMIX-OnLine database server to a newer release of INFORMIX-OnLine, turn to page 2-1 (Chapter 2).

Step 1
Login as user informix.

Ask all users of the INFORMIX-TURBO database server to exit their applications.

Make a copy of the configuration file, $INFORMIXDIR/etc/tbconfig. Keep the copy available for later use.

Step 2
Take the INFORMIX-TURBO database server to quiescent mode.

Change operating mode from the command line:
To move into quiescent mode immediately, execute the following: \texttt{tbmode -u} [ref Turbo:A]

Verify operating mode:
Verify that the INFORMIX-TURBO database server is in quiescent mode by executing the following: \texttt{tbstat -u} [ref Turbo:A]

The first line of the \texttt{tbstat} output contains the status of the INFORMIX-TURBO database server. It should appear as follows:
Step 3

Create a full INFORMIX-TURBO archive. This will ensure that you can restore your system if any problems occur during the conversion.

Before starting the archive, verify that the tape parameters specified are for a valid tape device (not /dev/null).

Verifying tape device and archiving from the Turbo Monitor:

1. To access Turbo Monitor, execute the following: `tbmonitor`
   
   Choose the Archive menu, Tape-Parameters option. Confirm that the Tape Device field contains a valid tape device. If not, enter a new device pathname and press ESC. If the device is valid, press ESC to exit the screen.

2. If you want to create the archive from the command line, exit the Turbo Monitor now and skip to the section titled "Archiving from the command line" on page 1-2. If you want to create the archive from the Turbo Monitor, complete this section.

3. Choose the Back-Up option from the Archive menu. [ref Turbo:A]

4. Follow the on-screen messages, which indicate when to mount the tape and how to label the tape(s) when the archive completes.

5. Exit the Turbo Monitor when the archive is complete.

6. Turn to step 4 on page 1-3.

Archiving from the command line:

1. To create the archive from the command line (after you have verified the tape device), execute the following: `tbtape -s` [ref Turbo:A]

2. Follow the on-screen messages, which indicate when to mount the tape and how to label the tape(s) when the archive completes.
Step 4

Bring the INFORMIX-TURBO database server offline.

Change operating modes from the command line:

To move into off-line mode, execute the following: `tbmode -k` [ref Turbo:A]

Verify operating mode:

Verify that the INFORMIX-TURBO database server is in off-line mode by executing the following: `tbmonitor` [ref Turbo:A]

The fourth line of the Turbo Monitor Main Menu contains the status of the INFORMIX-TURBO database server. It should appear as follows:

```
INFORMIX-TURBO: Status Parameters Dbspaces Mode Checkpoint
Status menu to view INFORMIX-TURBO
----------Off-Line----------------Type CRTL-W for Help ------------------
```

*This indicates INFORMIX-TURBO is off-line.* [ref Turbo:A]

INFORMIX-TURBO must be off-line because there are common files shared by INFORMIX-TURBO and INFORMIX-OnLine. INFORMIX-OnLine cannot be installed if any of the common files are active. Bringing INFORMIX-TURBO off-line ensures that everything is inactive.

**Note:** Use `tbmonitor` instead of `tbstat` (as in step 2) to verify the operating mode. The `tbstat` utility is not designed to return the operating mode status when INFORMIX-TURBO is offline.

Step 5

Install INFORMIX-OnLine using the UNIX Products Installation Guide supplied with the product. **Note:** You must be user `root` to install the product.

**Note:** If you install INFORMIX-OnLine in the same directory where INFORMIX-TURBO resides, INFORMIX-OnLine will overwrite INFORMIX-TURBO.

If you do not have the original media for INFORMIX-TURBO, you should back up the INFORMIX-TURBO product directory prior to loading the INFORMIX-OnLine product.

When the installation is complete, exit as user `root` and login as user `informix`. 
Note: The INFORMIX-TURBO and INFORMIX-OnLine database servers can coexist on the host machine (assuming enough disk and memory resources exist). Steps 7 and 8 provide information specific to having both INFORMIX-TURBO and INFORMIX-OnLine operating on the host machine.

Step 6

Before you can bring INFORMIX-OnLine online, you must create a configuration file for your INFORMIX-OnLine database server. Unlike INFORMIX-TURBO, INFORMIX-OnLine can support multiple INFORMIX-OnLine database servers on the same host machine. Therefore, each independent INFORMIX-OnLine database server must have its own customized configuration file. [ref OnLine:A] [ref OnLine5]

If you are operating only one INFORMIX-OnLine database server, you can use tbconfig as the configuration file name. If not, use names like tbconfig3 or tbconfig7 as the configuration file name.

If you plan to use the default configuration file (tbconfig) for your new INFORMIX-OnLine database server, then follow the instructions in the section titled “Using the default configuration file (tbconfig) for INFORMIX-OnLine.”

If you plan to use a customized configuration file name, then follow the instructions in the section titled “Using a customized configuration file name for INFORMIX-OnLine.”

Using the default configuration file (tbconfig) for INFORMIX-OnLine:

1. Change to the $INFORMIXDIR/etc directory by entering the following command at the system prompt:
   
   ```
   cd $INFORMIXDIR/etc
   ```

   **Note:** Your INFORMIXDIR and PATH environment variables should include the INFORMIX-OnLine product pathname before you change directories.

2. Verify that you have a backup copy of the configuration file tbconfig, and then remove the original file.

3. Copy tbconfig.std to tbconfig by entering:
   
   ```
   cp tbconfig.std tbconfig
   ```

   Do not remove the configuration file from $INFORMIXDIR/etc.

4. Check the permissions, ownership, and group of the configuration file to make sure it matches those of tbconfig.std.

5. Turn to step 7 on page 1-5.
Using a customized configuration file name for INFORMIX-OnLine:

1. Change to the `$INFORMIXDIR/etc` directory by entering the following command at the system prompt:
   ```
   cd $INFORMIXDIR/etc
   ```
   *Note:* Your `INFORMIXDIR` and `PATH` environment variables should include the INFORMIX-OnLine product pathname before you change directories.

2. Copy `tbconfig.std` to the customized configuration file by entering:
   ```
   cp tbconfig.std config-filename
   ```
   Do not remove the customized configuration file from `$INFORMIXDIR/etc`.

3. Add the following to the `.login` or `.profile` files for all INFORMIX-OnLine users who need access to this INFORMIX-OnLine database server:
   ```
   C Shell:    setenv TBCONFIG config-filename
   Bourne Shell: TBCONFIG=config-filename
                   export TBCONFIG
   ```

4. Check the permissions, ownership, and group of the customized configuration file to make sure it matches those of `tbconfig.std`.

Step 7

The new configuration file for the INFORMIX-OnLine database server must be modified to match the configuration file from the INFORMIX-TURBO product that it replaces. (Refer to the copy of the configuration file you made in step 1.)

4.x INFORMIX-OnLine has some new parameters in the configuration file that did not exist in INFORMIX-TURBO. Likewise, 5.x INFORMIX-OnLine has some new configuration file parameters that did not exist in either INFORMIX-TURBO or previous versions of INFORMIX-OnLine.

Verify that the common parameters which exist in both the INFORMIX-OnLine and INFORMIX-TURBO configuration files, such as the `ROOTPATH` parameter, now indicate the same value in the new INFORMIX-OnLine configuration file as that of the old INFORMIX-TURBO configuration file.

Review all of the configuration file parameters in the following tables to determine what new parameters may exist in the configuration file for INFORMIX-OnLine.
Tables 1 and 2 cover the new parameters added to the INFORMIX-OnLine configuration file. If you are converting to 4.x OnLine, review table 1. If you are converting to 5.x OnLine, review both tables.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mirroring Configuration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MIRROR</td>
<td>0</td>
<td>MIRROR indicates whether this INFORMIX-OnLine database server supports mirroring. Note: Specify 1 to enable mirroring. If 0 is specified, mirroring is not enabled.</td>
</tr>
<tr>
<td>MIRRORPATH</td>
<td>(- -)</td>
<td>MIRRORPATH is the pathname for the device that mirrors the initial root dbspace chunk, if mirroring is enabled.</td>
</tr>
<tr>
<td>MIRROROFFSET</td>
<td>0</td>
<td>Offset into mirrored device (Kbytes).</td>
</tr>
<tr>
<td><strong>Message Files</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONSOLE</td>
<td>/dev/console</td>
<td>CONSOLE is the console pathname. Messages that normally display at the console (full log messages, for example) can now be redirected to other terminals, printers or files. Messages that usually require immediate attention go to CONSOLE.</td>
</tr>
<tr>
<td><strong>Log Archive Tape Device</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LTAPEDEV</td>
<td>/dev/tapedev</td>
<td>INFORMIX-OnLine supports multiple tape devices. This path specifies the logical log backup device.</td>
</tr>
<tr>
<td>LTAPEBLK</td>
<td>16</td>
<td>Logical log tape block size (Kbytes).</td>
</tr>
<tr>
<td>LTAPESIZE</td>
<td>10240</td>
<td>Maximum amount of data to be placed on the logical log tape (Kbytes).</td>
</tr>
<tr>
<td><strong>System Configuration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SERVERNUM</td>
<td>0</td>
<td>Unique number between 0 and 255 that identifies the INFORMIX-OnLine system. The default value is zero. Each independent INFORMIX-OnLine database server is assigned a unique SERVERNUM.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>INFORMIX-TURBO defaults to 0 (this is not configurable.) Specify a SERVERNUM that is greater than zero for INFORMIX-OnLine if INFORMIX-OnLine and INFORMIX-TURBO coexist on the same host machine.</td>
</tr>
<tr>
<td>SERVERNAME</td>
<td>ONLINE</td>
<td>Unique name for each INFORMIX-OnLine system: SERVERNAME is limited to 18 characters. This is the value returned by the SQL SITENAME function.</td>
</tr>
</tbody>
</table>

Table 1: 4.x INFORMIX-OnLine configuration file changes [ref OnLine:A]
If you are converting to 4.x INFORMIX-OnLine, turn now to step 8 on page 1-9. If you are converting to 5.x INFORMIX-OnLine, review the information in Table 2. Each of the parameters is explained in greater detail in the 5.0 INFORMIX-OnLine Administrator’s Guide.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Configuration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBSERVERNAME</td>
<td>ONLINE</td>
<td>Unique name of the OnLine database server. Renamed from SERVERNAME in the 4.x releases.</td>
</tr>
<tr>
<td><strong>Shared Memory Parameters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANSACTIONS</td>
<td>20</td>
<td>Maximum number of concurrent transactions.</td>
</tr>
<tr>
<td>LRU</td>
<td>8</td>
<td>Number of Least Recently Used (LRU) queues.</td>
</tr>
<tr>
<td>LRU_MAX_DIRTY</td>
<td>60</td>
<td>LRU modified begin-cleaning limit (percent).</td>
</tr>
<tr>
<td>LRU_MIN_DIRTY</td>
<td>50</td>
<td>LRU modified end-cleaning limit (percent).</td>
</tr>
<tr>
<td>LTXHWM</td>
<td>80</td>
<td>Long transaction high-water mark (percent).</td>
</tr>
<tr>
<td>LTXEHWM</td>
<td>90</td>
<td>Long transaction exclusive high-water mark (percent).</td>
</tr>
<tr>
<td><strong>Machine- and Product-Specific Parameters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYNSHMSZ</td>
<td>0</td>
<td>Dynamic shared memory size (Kbytes).</td>
</tr>
<tr>
<td>GTRID_CMP_SZ</td>
<td>32</td>
<td>Number of bytes to use in grid comparison.</td>
</tr>
<tr>
<td>TXTTIMEOUT</td>
<td>300</td>
<td>Maximum timeout for INFORMIX-STAR (seconds).</td>
</tr>
<tr>
<td>SPINCNT</td>
<td>0</td>
<td>Number of times process tries for latch.</td>
</tr>
<tr>
<td>STAGEBLOB</td>
<td>blobspace name</td>
<td>Reserved for INFORMIX-OnLine/Optical.</td>
</tr>
</tbody>
</table>

Table 2: 5.x INFORMIX-OnLine configuration file changes  [ref OnLine5]
Step 8

Adjusting the parameters in the configuration file may change the amount of shared memory necessary for the new INFORMIX-OnLine database server, even if the parameters match those of the previous INFORMIX-TURBO database server. To determine the new shared memory requirements, take the following steps:

1. Execute the following: `tbmonitor` [ref OnLine:A] [ref OnLine5]

2. Select the Parameters menu, Shared-Memory option. Do not select the Initialize option. If you do, INFORMIX-OnLine will reinitialize disk space and all existing databases will be removed.

3. At the bottom of the screen, a field labeled `Shared memory size` displays the size of shared memory required by the INFORMIX-OnLine database server (in Kbytes).

   Compare this number to the number that was recorded in step 2. If the size of shared memory required by INFORMIX-OnLine is greater than the amount of shared memory available on your host machine, some of the parameters in the configuration file will have to be adjusted. (Check with your systems administrator to determine how much shared memory is available on your system and whether the amount of available shared memory can be increased).

   If adjustments must be made, modify the size of the logical and physical log buffers. Since INFORMIX-OnLine offers multiple log buffers, the size of the buffers can be reduced while maintaining buffer space equal to that which was available in INFORMIX-TURBO. For example, a value of 32 kilobytes for the physical log buffer actually means that INFORMIX-OnLine will allocate 64 kilobytes for the physical log buffer (2 logs x 32 kilobytes). Reducing the value to 16 kilobytes will still reserve 32 kilobytes of space, the same amount as was used with INFORMIX-TURBO.

   Adjusting the value of `BUFFERS` will affect shared memory size significantly; however, it may also have an impact upon performance.

4. If adjustments are needed, make the changes on the current screen. Continue reducing the size required for INFORMIX-OnLine shared memory until it can accommodated by your host machine.

5. After the size of shared memory has been adjusted fully, press `ESC` to save all changes.

   If the following warning appears, respond with an `N` and exit DB-Monitor (tbmonitor). Then repeat step 8 on page 1-9.
WARNING: THE ROOT DBSPACE WILL BE INITIALIZED.
ALL PREVIOUS DATA WILL BE DESTROYED.

If you did not receive the warning, you will be prompted with Do you want to keep these changes to the parameters. If the values are incorrect, respond with N, and repeat this step. Otherwise, respond with a Y. The following warning will be displayed:

WARNING: A CRITICAL SHARED MEMORY PARAMETER HAS BEEN MODIFIED. PLEASE MAKE NOTE OF THE CHANGES MADE.

Press RETURN at the prompt Press return to continue. This will reinitialize shared memory and leave the INFORMIX-OnLine database server in quiescent mode.


Step 9 (optional)

The INFORMIX-OnLine database server uses a more complex indexing scheme than INFORMIX-TURBO. As a result, indexes built with INFORMIX-TURBO may be incompatible with INFORMIX-OnLine. It is not possible to predict if an INFORMIX-TURBO index is incompatible with INFORMIX-OnLine. Therefore, it is recommended that you drop and rebuild all indexes.

This rebuild may be done at any time, although you should take this action as soon as possible. If you delay rebuilding the indexes, an application may encounter an incompatible index, which will stop the application and may be an inconvenience to your users.

If you decide not to rebuild the indexes, or if you plan to wait for a later time, skip to step 10 on page 1-12. Otherwise, follow these directions:

Warning: Do not allow users to access tables while the indexes are being rebuilt.

1. Execute the following: tbmode -m

   This will place the INFORMIX-OnLine database server online.

2. Enter DB-Monitor by executing the following: tbmonitor

3. Create a list of databases that are contained in this OnLine database server. To create a list of databases and owners, follow these steps:
   a. Choose the Status menu.
   b. Choose the Output option.
c. Enter a filename at the following prompt: **Please enter output filename and press Return.** This file will contain the database names and owners.

d. Choose the Databases option. Press **ESC** to exit the screen.

e. Exit DB-Monitor.

You must login as either user **informix** or the named database/index owner to retrieve information about the indexes and to rebuild the indexes.

4. Determine what indexes exist by examining the output from the **dbschema** utility. Execute the following for each of the databases:

   **dbschema -d database_name output_filename**

Using the following table as an example:

   CREATE TABLE starships
     (registry char(8), captain char(20), mission char(50), crew integer);

   CREATE INDEX i_registry ON starships (registry);

   CREATE INDEX i_mission ON starships (mission);

Dbschema would provide the table schema, permissions, and the following information regarding the indexes:

   CREATE INDEX "informix".i_registry ON "informix".starships (registry);

   CREATE INDEX "informix".i_mission ON "informix".starships (mission);

5. Use the information supplied by **dbschema** as a guide for dropping the indexes (i_registry and i_mission in the example above) using the SQL DROP INDEX statement. Rebuild the indexes on the same columns using the SQL CREATE INDEX statement. Repeat this procedure for all databases.

6. Place the INFORMIX-OnLine database server in quiescent mode by executing the following: **tbmode -uy**  [ref OnLine:A] [ref OnLine5]
Step 10 (optional)

Use the INFORMIX-OnLine tbcheck utility to verify the integrity of the INFORMIX-OnLine system before you allow users access to the databases. You can verify the integrity of the indexes, data, reserve pages, and the system catalog tables as follows: [ref OnLine:A] [ref OnLine5]

To check indexes, execute the following:

```
tbcheck -cI database_name
```

To check data, execute the following:

```
tbcheck -cD database_name
```

To check reserve pages, execute the following:

```
tbcheck -cr (no database name required)
```

To check system catalog tables, execute the following:

```
tbcheck -cc database_name
```

Step 11

Create a level-0 INFORMIX-OnLine system archive. (Refer to the INFORMIX-OnLine Administrator’s Guide for an explanation of 5.x OnLine transactions logging.)

Before starting the archive, verify that the tape parameters specified are for a valid tape device (not /dev/null).

Verifying tape device and archiving from DB-Monitor:

1. Enter DB-Monitor by executing the following: `tbmonitor`

2. Choose the Archive menu, Tape-Parameters option. Confirm that the 
   Tape Device and Log Tape Device fields contain valid tape devices. 
   If not, enter new device pathnames (you can use the same device) and 
   then press ESC. If the devices are valid, press ESC to exit the screen.

   If you want to create the archive from the command line, exit DB-Monitor 
   now and skip to the section titled "Archiving from the command line" on 
   page 1-13. If you want to create the archive from DB-Monitor, then com- 
   plete this section.

3. Choose the Create option on the Archive menu. [ref OnLine:A] [ref OnLine5]
4. Follow the on-screen messages that indicate when to mount the tape. Enter 0 when prompted with Please enter the level of the archive to be performed (0,1, or 2). [ref OnLine:A]  
[ref OnLine5]
5. Label the tape(s) as instructed when the archive completes.
6. Exit DB-Monitor when the archive is complete.
7. Turn to step 12 on page 1-14.

Archiving from the command line:

1. To create the archive from the command line (after you have verified the tape device), execute the following: **tbtape** -s  
[ref OnLine:A]  
[ref OnLine5]
2. Follow the on-screen messages that indicate when to mount the tape. Enter 0 when prompted with Please enter the level of the archive to be performed (0,1, or 2). [ref OnLine:A]  
[ref OnLine5]
3. Label the tape(s) as instructed when the archive completes.
Step 12

Place the INFORMIX-OnLine database server online.

Change operating modes from the command line:

To move into on-line mode from quiescent mode, execute the following:

```
tbmode -m [ref OnLine:A] [ref OnLine5]
```

Verify operating mode:

Verify that the INFORMIX-OnLine database server is in on-line mode by executing the following: `tbstat -u [ref OnLine:A] [ref OnLine5]`

The first line of the `tbstat` output contains the status of the INFORMIX-OnLine database server. It should appear as follows:

```
```

This indicates INFORMIX-OnLine is online.

The conversion is now complete and users may now access the INFORMIX-OnLine database server.

Databases will automatically be updated to the new version when the database is opened for the first time. This includes building any required system catalogs.
Converting an Existing INFORMIX-OnLine Database Server to a Newer Version of INFORMIX-OnLine

This chapter deals with the 11-step conversion of your existing INFORMIX-OnLine database server to a newer INFORMIX-OnLine database server. If you are converting an existing INFORMIX-TURBO database server to an INFORMIX-OnLine database server, refer to page 1-1.

Step 1

Login in as user informix.

Ask all users of the INFORMIX-OnLine database server to exit their applications.

Make a copy of the customized configuration file (which is defined by the $TBCONFIG environment variable). The default is $INFORMIXDIR/etc/tbconfig in the case where the $TBCONFIG environment variable has not been defined. Keep this copy available for later use.

Step 2

Take the INFORMIX-OnLine database server to quiescent mode.

Change operating mode from the command line:

To move into quiescent mode immediately, execute the following: \texttt{tbmode -u} [ref OnLine:A] [ref OnLine5]

Verify operating mode:

Verify that the INFORMIX-OnLine database server is in quiescent mode by executing the following: \texttt{tbstat -u} [ref OnLine:A] [ref OnLine5]
The first line of the `tbstat` output contains the status of the INFORMIX-OnLine database server. It should appear as follows:

```
RSAM Version x.xx.xxx - - Quiescent - - Up xx:xx:xx - - xxxx Kbytes
```

This indicates INFORMIX-OnLine is quiescent. Record the shared memory size for later use.

**Step 3**

Create a level-0 INFORMIX-OnLine archive. This will ensure that you can restore your system if problems occur during the conversion.

Before starting the archive, verify that the tape parameters specified are for a valid tape device (not `/dev/null`).

**Verifying tape device and archiving from DB-Monitor:**

1. Enter DB-Monitor by executing the following: `tbmonitor`
2. Choose the Archive menu, Tape-Parameters option. Confirm that the Tape Device and Log Tape Device fields contain valid tape devices. If not, enter new device pathnames (you can use the same device) and then press ESC. If the devices are valid, press ESC to exit the screen.
   - If you want to create the archive from the command line, exit DB-Monitor now and skip to the section titled “Archiving from the command line” on page 2-3. If you want to create the archive from DB-Monitor, then complete this section.
3. Choose the Create option on the Archive menu.
   - [ref OnLine:A] [ref OnLine5]
4. Follow the on-screen messages that indicate when to mount the tape. Enter 0 when prompted with Please enter the level of the archive to be performed (0, 1, or 2).
   - [ref OnLine:A] [ref OnLine5]
5. Label the tape(s) as instructed when the archive completes.
6. Exit DB-Monitor when the archive is complete.
7. Turn to step 4 on page 2-3.
Archiving from the command line:

1. To create the archive from the command line (after you have verified the tape device), execute the following: `tbtape -s`  
   [ref OnLine:A] [ref OnLine5]

2. Follow the on-screen messages, that indicate when to mount the tape. Enter 0 when prompted with *Please enter the level of the archive to be performed (0,1,or 2).*  
   [ref OnLine:A] [ref OnLine5]

3. Label the tape(s) as instructed when the archive completes.

Step 4

Bring the INFORMIX-OnLine database server off-line.

Change operating modes from the command line:

To move into off-line mode, execute the following: `tbmode -k`  
[ref OnLine:A] [ref OnLine5]

Verify operating mode:

Verify that the INFORMIX-OnLine database server is in off-line mode by executing the following: `tbmonitor`  
[ref OnLine:A] [ref OnLine5]

The fourth line of the DB-Monitor Main Menu contains the status of the INFORMIX-OnLine database server. It should appear as follows:

```
INFORMIX-OnLine: Status Parameters Dbspaces Mode Force-Ckpt
Status menu to view INFORMIX-OnLine
--------------------Off-Line----------------------Type CTRL-W for Help --------------------
```

*This indicates INFORMIX-OnLine is offline.*  
[ref OnLine:A] [ref OnLine5]  

INFORMIX-OnLine must be offline because there are common files shared by the older INFORMIX-OnLine and the newer INFORMIX-OnLine products. INFORMIX-OnLine cannot be installed if any of the common files are active. Bringing INFORMIX-OnLine offline ensures that everything is inactive.

Note: Use `tbmonitor` instead of `tbstat` (as in step 2) to verify the operating mode. The `tbstat` utility is not designed to return the operating mode status when INFORMIX-OnLine is offline.
Step 5

Install the newer INFORMIX-OnLine product using the UNIX Products Installation Guide supplied with the product. Note: You must be user root to install the product.

Note: When you install INFORMIX-OnLine, the newer INFORMIX-OnLine software will overwrite the existing INFORMIX-OnLine software. If you do not have the original INFORMIX-OnLine product media, you should back up the INFORMIX-OnLine product directory prior to loading the newer INFORMIX-OnLine product.

When the installation is complete, exit as user root and login as user informix.

Step 6

Before you can bring INFORMIX-OnLine online, you may need to create a configuration file for the new INFORMIX-OnLine database server.

If you are converting from an existing 4.0 INFORMIX-OnLine database server to a version 4.1 database server, then follow the instructions in the section titled "Converting from 4.0 INFORMIX-OnLine to 4.1 INFORMIX-OnLine."

If you are converting from an existing 4.x INFORMIX-OnLine database server to 5.x INFORMIX-OnLine, then follow the instructions in the section titled "Converting from 4.x INFORMIX-OnLine to 5.x INFORMIX-OnLine."

If you are converting from an existing 5.0 INFORMIX-OnLine database server to a version 5.x database server, then follow the instructions in the section titled "Converting from 5.0 INFORMIX-OnLine to 5.x INFORMIX-OnLine."

Converting from 4.0 INFORMIX-OnLine to 4.1 INFORMIX-OnLine:

If you are converting from an existing 4.0 INFORMIX-OnLine system to 4.1 INFORMIX-OnLine, you can use your existing configuration file. Verify that the $TBCONFIG environment variable indicates the custom configuration file that was used for the 4.0 INFORMIX-OnLine system. After verifying that $TBCONFIG specifies a valid configuration file, take the following steps:

1. Change INFORMIX-OnLine from off-line mode to quiescent mode by executing the following: tbinit -s [ref OnLine:A] [ref OnLine5]
2. Turn to step 9 on page 2-8.
Converting from 4.x INFORMIX-OnLine to 5.x INFORMIX-OnLine:

If you are converting from an existing 4.x INFORMIX-OnLine system to 5.x INFORMIX-OnLine, you must take the following steps to ensure the new configuration file name is recognized by your INFORMIX-OnLine database server:

1. Change to the $INFORMIXDIR/etc directory by entering the following at the system prompt:
   
   \texttt{cd \$INFORMIXDIR/etc}

   \textbf{Note:} Your INFORMIXDIR and PATH environment variables should include the INFORMIX-OnLine product pathname before you change directories.

2. Copy \texttt{tbconfig.std} to the customized configuration file by entering:
   
   \texttt{cp tbconfig.std config-filename}

   Do not remove the customized configuration file from $INFORMIXDIR/etc.

3. Add the following to the \texttt{.login} or \texttt{.profile} files for all INFORMIX-OnLine users who need access to this INFORMIX-OnLine database server:

   \textbf{C Shell:}
   
   \texttt{setenv TBCONFIG config-filename}

   \textbf{Bourne Shell:}
   
   \texttt{TBCONFIG=config-filename}

   \texttt{export TBCONFIG}

4. Check the permissions, ownership, and group of the customized configuration file to make sure it matches those of \texttt{tbconfig.std}.

Converting from 5.0 INFORMIX-OnLine to 5.x INFORMIX-OnLine:

If you are converting from an existing 5.0 INFORMIX-OnLine system to 5.x INFORMIX-OnLine, you can use your existing configuration file. Verify that the $TBCONFIG environment variable indicates the custom configuration file that was used for the 5.0 INFORMIX-OnLine system. After verifying that $TBCONFIG specifies a valid configuration file, take the following steps:

1. Change INFORMIX-OnLine from off-line mode to quiescent mode by executing the following: \texttt{tbinit -s [ref OnLine:A][ref OnLine5]}

2. Turn to step 9 on page 2-8.
Step 7

The new configuration file for the 5.x INFORMIX-OnLine database server must be modified to match the configuration file from the 4.x INFORMIX-OnLine product that it replaces. (Refer to the copy of the configuration file you made in step 1.)

5.x INFORMIX-OnLine has some new configuration file parameters that did not exist in prior versions of INFORMIX-OnLine.

Verify that the common parameters which exist in both the 4.x INFORMIX-OnLine and 5.x INFORMIX-OnLine configuration files, such as the ROOTPATH parameter, now indicate the same value in the 5.x INFORMIX-OnLine configuration file as that of the old 4.x INFORMIX-OnLine configuration file.

Review all of the configuration file parameters in the following table to determine what new parameters may exist in the configuration file for 5.x INFORMIX-OnLine.

The following table covers the new parameters added to 5.x INFORMIX-OnLine. Review this before you continue with the conversion.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System Configuration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBSERVERNAME</td>
<td>ONLINE</td>
<td>Unique name of the OnLine database server. Renamed from SERVERNAME in the 4.x releases.</td>
</tr>
<tr>
<td><strong>Shared Memory Parameters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TRANSACTIONS</td>
<td>20</td>
<td>Maximum number of concurrent transactions.</td>
</tr>
<tr>
<td>LRUS</td>
<td>8</td>
<td>Number of Least Recently Used (LRU) queues.</td>
</tr>
<tr>
<td>LRU_MAX_DIRTY</td>
<td>60</td>
<td>LRU modified begin-cleaning limit (percent).</td>
</tr>
<tr>
<td>LRU_MIN_DIRTY</td>
<td>50</td>
<td>LRU modified end-cleaning limit (percent).</td>
</tr>
<tr>
<td>LTXHWM</td>
<td>80</td>
<td>Long transaction high-water mark (percent).</td>
</tr>
<tr>
<td>LTXEHWM</td>
<td>90</td>
<td>Long transaction exclusive high-water mark (percent).</td>
</tr>
<tr>
<td><strong>Machine- and Product-Specific Parameters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DYNSHMSZ</td>
<td>0</td>
<td>Dynamic shared memory size (Kbytes).</td>
</tr>
</tbody>
</table>

Table 1: 5.x INFORMIX-OnLine configuration file changes [ref OnLine5]
Step 8

Adjusting the parameters in the configuration file may change the amount of shared memory necessary for the new INFORMIX-OnLine database server, even if the parameters match those of the previous INFORMIX-OnLine database server. To determine the new shared memory requirements, take the following steps:

1. Execute the following: `tbmonitor` [ref OnLine5]

2. Select the Parameters menu, Shared-Memory option. Do not select the Initialize option. If you do, INFORMIX-OnLine will reinitialize disk space and all existing databases will be removed.

3. At the bottom of the screen, a field labeled **Shared memory size** displays the size of shared memory required by the INFORMIX-OnLine database server (in Kbytes).

   Compare this number to the number that was recorded in step 2. If the size of shared memory required by INFORMIX-OnLine is greater than the amount of shared memory available on your host machine, some of the parameters in the configuration file will have to be adjusted. (Check with your systems administrator to determine how much shared memory is available on your system and whether the amount of available shared memory can be increased).

   Adjusting the value of BUFFERS will effect shared memory size significantly; however, it may also have an impact upon performance.

---

**Table 1: 5.x INFORMIX-OnLine configuration file changes**  [ref OnLine5]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GTRID_CMP_SZ</td>
<td>32</td>
<td>Number of bytes to use in grid comparison.</td>
</tr>
<tr>
<td>TXTIMEOUT</td>
<td>300</td>
<td>Maximum timeout for INFORMIX-STAR (seconds).</td>
</tr>
<tr>
<td>SPINCNT</td>
<td>0</td>
<td>Number of times process tries for latch.</td>
</tr>
<tr>
<td>STAGEBLOB</td>
<td>blobspace name</td>
<td>Reserved for INFORMIX-OnLine/Optical.</td>
</tr>
</tbody>
</table>

**Note:** Refer to the 5.x INFORMIX-OnLine Administrator's Guide for detailed descriptions of the parameters listed in table 1.
4. If adjustments are needed, make the changes on the current screen. Continue reducing the size required for OnLine shared memory until it can be accommodated by your host machine.

5. After the size of shared memory has been adjusted fully, press ESC to save all changes.

If the following warning appears, respond with an N and exit DB-Monitor (tbmonitor). Then repeat this step.

WARNING: THE ROOT DBSPACE WILL BE INITIALIZED.
ALL PREVIOUS DATA WILL BE DESTROYED.

If you did not receive the warning, you will be prompted with Do you want to keep these changes to the parameters. If the values are incorrect, respond with N, and repeat this step. Otherwise, respond with a Y. The following warning will be displayed:

WARNING: A CRITICAL SHARED MEMORY PARAMETER HAS BEEN MODIFIED. PLEASE MAKE NOTE OF THE CHANGES MADE.

Press RETURN at the prompt Press return to continue. This will reinitialize shared memory and leave the INFORMIX-OnLine database server in quiescent mode.


Step 9 (optional)

The INFORMIX-OnLine tbcheck utility should be used to verify the integrity of the INFORMIX-OnLine system before allowing users access to the databases. The integrity of the indexes, data, reserve pages, and the system catalog tables can be verified as follows: [ref OnLine:A] [ref OnLine5]

To check indexes, execute the following:

   `tbcheck -ci database_name`

To check data, execute the following:

   `tbcheck -cD database_name`

To check reserve pages, execute the following:

   `tbcheck -cr (no database name required)`

To check system catalog tables, execute the following:

   `tbcheck -cc database_name`
Step 10

Perform a level-0 INFORMIX-OnLine system archive. (Refer to the INFORMIX-OnLine Administrator’s Guide for an explanation of 5.x OnLine transaction logging.)

Before starting the archive, verify that the tape parameters specified are for a valid tape device (not /dev/null).

Verifying tape device and archiving from DB-Monitor:

1. Enter DB-Monitor by executing the following: `tbmonitor`
2. Choose the Archive menu, Tape-Parameters option. Confirm that the Tape Device and Log Tape Device fields contain valid tape devices. If not, enter new device pathname (you can use the same device) and press ESC. If the devices are valid, press ESC to exit the screen.

If you want to create the archive from the command line, exit DB-Monitor now and skip to the section titled "Archiving from the command line " on page 2-9. If you want to create the archive from DB-Monitor, then complete this section.

3. Choose the Create option on the Archive menu. [ref OnLine:A] [ref OnLine5]
4. Follow the on-screen messages that indicate when to mount the tape. Enter 0 when prompted with Please enter the level of the archive to be performed (0,1,or 2). [ref OnLine:A] [ref OnLine5]
5. Label the tape(s) as instructed when the archive completes.
6. Exit DB-Monitor when the archive is complete.
7. Turn to step 11 on page 2-10.

Archiving from the command line:

1. To create the archive from the command line (after you have verified the tape device), execute the following: `tbtape -s` [ref OnLine:A] [ref OnLine5]
2. Follow the on-screen messages that indicate when to mount the tape. Enter 0 when prompted with Please enter the level of the archive to be performed (0,1,or 2). [ref OnLine:A] [ref OnLine5]
3. Label the tape(s) as instructed when the archive completes.
Step 11

Place the INFORMIX-OnLine database server online.

Change operating modes from the command line:

To move into on-line mode from quiescent mode, execute the following:

```
tbmode -m
```

Verify operating mode:

Verify that the INFORMIX-OnLine database server is in on-line mode by executing the following:

```
tbstat -u
```

The first line of the `tbstat` output contains the status of the INFORMIX-OnLine database server. It should appear as follows:

```
```

This indicates INFORMIX-OnLine is online.

The conversion is now complete and users may now access the INFORMIX-OnLine database server.

Databases will automatically be updated to the new version when the database is opened for the first time. This includes building any required system catalogs.
Questions and Answers

QUESTION: I am converting from INFORMIX-TURBO to INFORMIX-OnLine, but I have multiple copies of INFORMIX-OnLine (4.0 and 4.1). I've never installed 4.0 INFORMIX-OnLine. Should I convert to 4.0 and then 4.1, or go directly to 4.1?

ANSWER: Convert directly to the newest version of INFORMIX-OnLine, bypassing older versions that were never installed.

QUESTION: Do I have to convert each database server?

ANSWER: When you load the newer INFORMIX-OnLine software over the older software, you are always running with the newer software. If you are converting from 4.0 OnLine to 4.1 OnLine, this is the only conversion that is needed. If you are converting from 4.x OnLine to 5.x OnLine, additional steps are required (refer to page 2-1 (Chapter 2)).

When you load the newer software in a directory separate from the older software, the multiple database servers can be converted to the newer software at any time. If you are converting from 4.0 OnLine to 4.1 OnLine, the environment variables that indicate the product pathnames need to be modified and the configuration file will have to be moved to the new product directory. If you are converting from 4.x OnLine to 5.x OnLine, additional steps are required and will have to be taken before you can convert to the 5.x version (refer to page 2-1).
QUESTION: Where can I find out what has changed between the releases?
ANSWER: The beginning of each INFORMIX-TURBO or 4.x INFORMIX-OnLine manual lists the changes since the last version. Version 5.x documentation lists new features in the Introduction. INFORMIX-OnLine also contains a "release notes" file in the $INFORMIXDIR/releases directory, which lists changes made to that version.

QUESTION: How long will the conversion take?
ANSWER: This will vary depending on the version of the product you are converting to. Converting to INFORMIX-OnLine from INFORMIX-TURBO has two optional steps, which include rebuilding indexes and verifying the integrity of the database server. The addition of these two steps will increase the conversion time. The amount of increase depends upon the amount of data. Converting from older INFORMIX-OnLine to newer INFORMIX-OnLine only has one optional step, which may increase the conversion time.

QUESTION: If my conversion fails, what should I do?
ANSWER: If you require assistance with these procedures, please contact your local Customer Services Engineer or the Informix Technical Support Department in Menlo Park, California, at (800) 274-8184.
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