Lucent Technologies
Bell Labs Innovations

CONVERSANT® VIS

Version 4.0
Year 2000 Compliance
For Systems Located Outside the United States and Canada

Contents

Contents

Year 2000 Compliance

Overview

The V4 Year 2000 Update Kit contains the tools you need to update your 486 BIOS, UNIX, and CONVERSANT® system to become year 2000 compliant.

This kit is for systems located outside the U.S. or Canada. A different kit is provided for systems in the U.S. or Canada, and it is important to make sure that you have the appropriate version. Do not use this update kit for a system that is located in the U.S. or Canada. The Price Element Code (PEC) for each version is listed below should you need to reorder.

- For a system located in the U.S. or Canada: 1321–600

- For a system located outside of the U.S. or Canada: 1321–601

⮞ **NOTE:**
    If you use Graphical Designer, you should not install the updates in this kit. Contact your Lucent Technologies Account Representative about upgrading to a later release of CONVERSANT.

This document provides the following information:

- Contents of the update kit — A list of the diskettes and documentation included in the kit.

- Definition of year 2000 compliance — A general description of year 2000 compliance, including the address for the World Wide Web site for Lucent Business Communications Systems (BCS) where you can view the BCS definition of compliance. Also included is a summary of customer responsibilities for ensuring year 2000 compliance.

- CONVERSANT V4 system areas affected by year 2000 issues — A table showing the affected areas, both before and after the update.

- Installation procedures — Complete instructions on how to install all of the updates in the kit.

- Additional actions required — Descriptions of all actions that you must perform after you have installed the updates.

- Guidelines for reviewing your applications — A checklist of suggested areas to investigate in your applications when reviewing them for year 2000 compliance.

- Notes on developing applications that are year 2000 compliant — Recommendations to follow to keep your applications year 2000 compliant.

- Areas requiring additional consideration — Descriptions of areas that can continue to cause errors, including any corrective or alternative actions that are available.

- Removal procedures — Instructions on how to remove the CONVERSANT and UNIX updates. The BIOS update cannot be removed.

- Support for this product — A description of the support that is available for this product through the year 2001.

Purpose

The purpose of this document is to guide the CONVERSANT VIS 4.0 customer through the steps necessary to install the updates for year 2000 compliance, to provide guidelines for reviewing existing applications and developing future ones, and to document the areas that might perform differently because of the year 2000.

Disclaimer: We have attempted in this book to provide an exhaustive list of items affected by the year 2000. However, we may have overlooked other areas. If you identify any such areas, contact the remote maintenance center to report the problem. Lucent Technologies makes no representation or warranty that this version or any other version of the CONVERSANT system is entirely year 2000 compliant.

Contents of the V4 Year 2000 Update Kit

The V4 Year 2000 Update Kit enables you to update your CONVERSANT VIS 4.0 system to make it year 2000 compliant. Along with this document, the update kit contains the following:

- 486 BIOS Version 2.1g — One diskette. For MAP/100 or MAP/40 486 systems only. You do *not* need to install the 486 BIOS update if you have a MAP/100 or MAP/40 with a 386 processor.

- UNIX System V/386 3.2.3 Year 2000 Update — One diskette. This update is used for both 386 and 486 processors.

- CONVERSANT VIS V4.0 Year 2000 Update — Three diskettes. Use only for systems located outside of the U.S. or Canada.

About Year 2000 Compliance

When the date changes from the 20th century (19xx) to the 21st (20xx), CONVERSANT features that contain or handle two-digit calendar years, such as reports and call data records, can function in atypical ways. Also, CONVERSANT applications that process data containing dates from the 21st century may require modifications in order to ensure that calendar years are handled correctly. "Year 2000 compliance" is the process of updating and modifying your system so that it handles 21st-century calendar years accurately.

Lucent BCS Internet Web Site

For the most current information about year 2000 issues and Lucent Business Communications Systems (BCS) products, see our World Wide Web site at **www.lucent.com/enterprise/sig/yr2000** (or, from the Lucent Technologies home page of www.lucent.com, click on Enterprise, then Year 2000).

At this site, you can view the complete Lucent BCS definition of compliance. To view compliance information for your CONVERSANT product, click on BCS Product Compliance Status, then click on Voice Response.

Customer Responsibilities

The following list summarizes the steps that customers are responsible for taking to make their CONVERSANT VIS system year 2000 compliant. More detailed instructions or guidelines are included in this document for each step. The most time-consuming step is that of reviewing your applications for non-compliant behavior. If areas of non-compliancy are found and modifications are needed, these changes are usually minor and easy to fix.

1. Read through this document to ensure that you understand all areas that apply to your system for year 2000 compliance.

2. Install the applicable updates from the V4 Year 2000 Update Kit. Note that installing these updates will not harm your applications (it makes minor changes to the parameters files for your applications when converting them to the new version of Script Builder). After installation is complete, you will need to test your applications before routing live traffic back into the system.

3. Ensure that all applications are year 2000 compliant, which includes the following tasks:

   ■ Assess your resources: For example, determine if you have applications that were developed by an outside vendor, or if you have the in-house expertise to review your applications.

   ■ Familiarize yourself with the areas affected by year 2000.

   ■ Determine which applications need to be reviewed. It is likely that any applications using two-digit years will need to be modified.

   ■ Review, modify if necessary, and test the appropriate applications.

   ➡ **NOTE:**
   Lucent Technologies *strongly recommends* that you contract with a software provider to test your applications.

4. Take any additional actions that are required, such as converting components or restarting the system.

5. Ensure that applications developed now and in the future are year 2000 compliant.

6. Familiarize yourself with all remaining areas that might behave differently concerning calendar dates.

Areas Affected

Table 1 lists the areas of the CONVERSANT VIS Version 4.0 system that are affected by the year 2000. This table describes how the system performed before the update kit was installed, and how it will perform after.

Table 1.   V4.0 System Areas Affected by Year 2000

Area Affected	Behavior Before Update	Behavior After Update
Call data handling and reports	The system used a two-digit year and assumed 19xx. Call data could not be stored or retrieved after 2000. Error messages would occur after roll-over to year 2000 when attempts were made to insert call data into the system database tables. Impact: No call data reporting is available after 2000.	The system uses a four-digit year when handling call data records. Reports can retrieve data across 20th and 21st centuries. Command line options (for example, **cddrpt**) now recognizes 00 through 69 for years 2000 through 2069.
Script Builder database tables using date fields with two-digit year	All dates were stored internally with a four-digit year. However, an administrator or application could insert a date field using only a two-digit year, in which case the system appended "19" as the century. For example, "10/25/01" would be inserted as "10/25/1901". If the application always uses four-digit years in date fields, there is no problem. Impact: Calls might be mishandled if the application depends on the correct century.	If an application inserts a date field with two-digit year, the system appends the *current* century to the value. If your data spans the 20th and 21st centuries, it is recommended that your applications use four-digit years.
Holidays	When setting system holidays within an application (for special handling in the application), the system only allowed years from '89 through '99. Impact: Callers will receive normal (instead of special) handling on holidays after 2000, even if the staff or other systems are not available.	All applications are updated to use four-digit years for a holiday in the range from 1000 through 9999. Menu options for setting holidays now accept a four-digit year.

Continued on next page

Table 1.   V4.0 System Areas Affected by Year 2000 — *Continued*

Area Affected	Behavior Before Update	Behavior After Update
Seasonal Greetings	When setting seasonal greetings within an application, the system only allowed years from '89 through '99. Impact: No seasonal greetings are played after 2000.	All applications are updated to use four-digit years for a seasonal greeting in the range from 1000 through 9999. Menu options for setting seasonal greetings now accept a four-digit year.
Script Builder Host Screen date fields with two-digit year	A two-digit year (defined with the 'Y' date format) retrieved from the IBM host was always translated into 19*xx*. Impact: Calls can be mishandled if the application depends on the correct century.	The 'Y' host field date format now indicates a two-digit year in the *current* century. A new YT<*threshold*> date format lets application developers indicate a threshold for a 100-year sliding window across the 20th and 21st centuries (for example, 1970-2069, 1900-1999, or 2000-2099). The sliding window is determined by a threshold that is set per date field by the application developer. See "Use New Formats for Script Builder Host Input date Fields" in the section "Developing Compliant Applications" for how to use the new date formats.
Script Builder speaking dates after 1999	Some oddities occurred for several date formats when using U.S. English standard speech and U.S. English Text to Speech. For example, when speaking year 2000 dates with the date format of DMDY, the last two digits of the year 2000 were spoken as "oh-zero". Impact: Callers may have difficulty understanding the year spoken when these formats are used.	Years are now spoken in the preferred format shown in Table A-1 in Appendix A, "For Advanced Users".

Table 1.   V4.0 System Areas Affected by Year 2000 — *Continued*

Area Affected	Behavior Before Update	Behavior After Update
UNIX System V/386 Release 3.2 Version 2.3	Various non-compliant commands: date, sar, touch, passwd, prfpr, at, face, lp <u>Impact</u>: Could cause system administration difficulties or problems for custom shell scripts or C programs.	UNIX is made compliant such that CONVERSANT software and hardware meet requirements as stated in the Lucent BCS web site. See the section "Lucent BCS Internet Web Site" for the address.
486 BIOS (25MHz and 50MHz) Version 2.1c	The CMOS BIOS locked up if entered after year 2000. <u>Impact</u>: The system would not function after 2000.	The Version 2.1g BIOS will not lock up after the year 2000.

Installation Procedures

This section give procedures for installing the updates in the V4 Year 2000 Update Kit. The CONVERSANT VIS V4.0 Year 2000 Update Kit contains the following diskettes:

- 486 BIOS Version 2.1g — One diskette. The BIOS update is for MAP/100 or MAP/40 486 systems only. You do not need to install the 486 BIOS update if you have either a MAP/100 or MAP/40 with a 386 processor.

- UNIX System V/386 3.2.3 Year 2000 Update — One diskette.

- CONVERSANT VIS V4.0 Year 2000 Update — Three diskettes. Used for systems located outside the U.S. or Canada.

Table 2 shows the components involved in installing these updates with the approximate time it takes to complete each part. Each part is described in more detail in the procedures to follow. All times in the table are approximate times and can vary depending on the number of applications you have.

Table 2. Installation Components with Approximate Times

Component	Approximate Time
Back up your system (optional but recommended)	2 hours
Prepare for the Voice System to stop	< 20 minutes
Install the 486 BIOS update (for 486 systems only)	10 minutes
Install the UNIX update	5 minutes
Install the CONVERSANT update:	
Basic installation of the CONVERSANT update	20 minutes
Conversion of applications to new Script Builder (optional but recommended)	< 5 minutes
Verification and installation of applications (optional but recommended)	10 to 20 minutes
Back up your system again with another tape (optional but recommended)	2 hours

Before You Begin

⚠ CAUTION:

Before you install this update kit, you are strongly advised to do the following:

Back Up Your System

Make a complete backup of your entire system before you begin the installation. You can use the **mkimage** command to make this backup. For further instructions on backing up your system, see *CONVERSANT VIS Version 4.0 Maintenance,* 585-350-112 (or *CONVERSANT VIS Version 4.0 Command Reference,* 585-350-209, for details on the mkimage command).

After you have completed the installation process, make a complete backup of your entire system again. Use a different tape for this second backup.

Route Calls Away

Because the CONVERSANT voice system is stopped during the updates, plan to install the updates at a time when your system is not busy and have the system administrator route calls away from the system.

Installing the 486 BIOS Version 2.1g Update

The 486 BIOS Version 2.1g update consists of one diskette. Once installed, the BIOS system update cannot be removed. Note that not all systems require the BIOS system update; see the next section to determine if your system requires it.

> **NOTE:**
> The BIOS update affects only those aspects of the CPU card that are necessary to correct year 2000 issues, as well as some minor text changes in the Power-On Self-Test (POST) screen.

Who Should Install the BIOS Update?

You do not need to install the 486 BIOS update if you have a MAP/100 or MAP/40 platform with a 386 processor. If you have a 386 processor, proceed to the next main section, "Installing the UNIX System V/386 3.2.3 Year 2000 Update". If you have a 486 processor, proceed to the section, "Installing the BIOS Update" below.

If you are not sure which processor you have, use the following procedure to determine the speed:

1. Type **cd /** at the UNIX prompt and press (ENTER).

2. Type **/etc/memsize** and press (ENTER).

   The system displays a number, for example `12189696` or `16384000`. If the number begins with "12", the processor is a 386. You do not need to install the 486 BIOS update and should proceed to the section "Installing the UNIX System V/386 3.2.3 Year 2000 Update".

   If the number begins with "16", the processor is a 486. You should install the 486 BIOS update according to the procedure below.

Installing the BIOS Update

Use the following procedure to install the update:

1. Log in as **root**

2. Stop the VIS system. You can type **stop_vs** and press (ENTER). If you need further instruction, see the procedures given in *CONVERSANT VIS Version 4.0 Maintenance,* 585-350-112.

3. Stop the UNIX system as follows. See the procedures given in *CONVERSANT VIS Version 4.0 Maintenance,* 585-350-112, if you need further instruction.

   a. Type **cd /** and press (ENTER).

   b. Type **/etc/shutdown -g0 -y** and press (ENTER).

   The system shuts down and then displays the following message:

   ```
   Reboot the system now
   ```

4. Insert the BIOS Version 2.1g update diskette in the floppy disk drive.

5. Press either `CONTROL` `ALT` `DELETE` or the Reset button to restart the system from the diskette.

   The system begins to restart and displays a dialogue box with the following options:

   ```
   ENTER: Program New BIOS
     ESC: Abort and Reset System
   ```

6. Press `ENTER` to select `Program New BIOS`.

   The window displayed shows the progress of the installation. When the BIOS programming operation is complete, a dialogue box displays the message below.

   ⇒ **NOTE:**
   You must remove the diskette before you press any key to restart.

   ```
   The System Will Need to Be Reset
   Press Any Key to Reset
   ```

7. Remove the diskette before you reset the system.

8. Press any key to reset the system. If the system does not restart after 30 seconds, press the Reset button again to restart.

9. When the POST screen is displayed during the restart, look for the BIOS version number in the following line, located under the copyright notice, and verify that it is correct:

   ```
   D486SX 25 MHz Industrial Computer BIOS, Version 2.1g
   ```

10. You are now ready to install the UNIX System V/386 3.2.3 Year 2000 Update update. Proceed to the following section, "Installing the UNIX System V/386 3.2.3 Year 2000 Update".

Installing the UNIX System V/386 3.2.3
Year 2000 Update

The UNIX System V/386 3.2.3 Year 2000 Update consists of one diskette. Although this update is named "V/386", this update is used for both 386 and 486 processors. Use the following procedure to install the update:

1. Log in as **root**

2. Stop the VIS system. You can type **stop_vs** and press (ENTER). If you need further instruction, see the procedures given in *CONVERSANT VIS Version 4.0 Maintenance,* 585-350-112.

3. At the prompt, type **installpkg**, and then press (ENTER).

   The system displays the following message:

   ```
   Please indicate the installation medium
   you intend to use.
   ```

4. Type **F**

   The system displays the following message:

   ```
   Please insert the floppy disk.
   Strike ENTER when ready
   or ESC to stop
   ```

5. Insert the UNIX System V/386 3.2.3 Year 2000 Update diskette in the floppy disk drive and press (ENTER).

   The system begins the installation procedure.

6. When the installation is complete, the system displays the following message:

   ```
   The installation of the UNIX System V/386 3.2.3 Year
   2000 Update is now complete.
   ```

7. Remove the diskette from the floppy disk drive.

8. You are now ready to install the CONVERSANT VIS V4.0 Year 2000 Update. Proceed to the next section "Installing the CONVERSANT VIS V4.0 Year 2000 Update".

Installing the CONVERSANT VIS V4.0
Year 2000 Update

The CONVERSANT VIS V4.0 2000 Update contains three diskettes. These diskettes are for use with systems located outside of the U.S. or Canada.

Use the following procedure to install the CONVERSANT Update.

➡ **NOTE:**
If the Voice System is currently running, it will be stopped during installation of this update. The system will prompt you near the end of the installation for permission to restart the Voice System.

1. At the UNIX prompt, type **installpkg**, and then press ⌴ENTER⌴.

   The system displays the following message:

   ```
   Please indicate the installation medium
   you intend to use.
   ```

2. Type **F**

   The system displays the following message:

   ```
   Please insert the floppy disk.
   Strike ENTER when ready
   or ESC to stop
   ```

3. Insert the first of the three CONVERSANT VIS V4.0 2000 Update diskettes in the floppy disk drive, and press ⌴ENTER⌴.

4. Follow the instructions displayed on the screen as to when to insert the remaining diskettes.

   If the Voice System is currently running, the system displays the following message when diskette three is in the disk drive:

   ```
   Voice System is currently running. The Voice System
   must be STOPPED as part of the installation for
   this package: CONVERSANT VIS V4.0 Year 2000 Update.
   Is it okay to stop the Voice System during this
   installation (y/n) [y]
   ```

5. Press (ENTER) or enter **y** to have the system stop the Voice System and continue with the installation. The system will prompt you for permission to restart your Voice System before it completes the installation.

   If you enter **n**, the installation will stop and the update will not be loaded.

   After a few minutes, the system displays the following message to verify that you want to convert your applications to the new version of Script Builder at this time:

   ```
   The system is ready to convert existing Script builder
   applications so that they can be modified and viewed
   using Script Builder Version_4.0.y2k. This procedure
   will overwrite the files of existing Script Builder
   applications. You may want to do a BACKUP and use the
   "sb_conv" command to do the conversion after the
   installation.
   ```

   ```
   Do you want your applications converted now? (y/n) [y]
   ```

6. Determine if you want to convert your applications now. See "Converting Script Builder Applications" below for details about this conversion process and how to convert your applications manually if you do not convert them during the installation. If you have many applications, this conversion process could take up to five minutes.

   Enter one of the following:

   - **y** (or just press (ENTER)) to proceed with the conversion. The following occurs:

     The system updates your applications and displays the following message for each application it converts:

     ```
     Converting <application name>
     ```

     After each application is converted, the system displays the following message and then continues on to the next application:

     ```
     Conversion completed
     ```

   - **n** to omit the conversion. (If you do not convert your applications now, you must convert them later.) The system will display the following message and then continue with the installation:

     ```
     The existing applications will not be converted.
     Use the "sb_conv" command to convert applications
     to Script Builder Version_4.0.y2k at a later time.
     Example sb_conv <application> Version_4.0.y2k
     ```

7. The system then prompts you for permission to restart the Voice System. Enter one of the following:

■ **y** (yes) to start the Voice System. The Voice System is started, and then the system prompts you for permission to verify and install your applications. You must verify and install your applications, either now or later, in order to take advantage of the features provided by this update. The process of verifying and installing your applications can take up to twenty minutes if you have many applications. Enter one of the following:

— **y** (or just press ⎡ENTER⎤) to proceed with the verification and installation.

The system verifies and installs all applications and stores the results in a file named `/readme.out`
You can view the results after the installation is completed by entering **pg /readme.out** at the system prompt.

— **n** to omit verification and installation of your applications. You will need to verify and install your applications on your own after the installation is completed.

■ **n** (no) to have it remain stopped. If you select **n**, the system will not prompt you to have your applications verified and installed. You will need to verify and install your applications on your own after the installation is completed.

8. When the installation of this update is complete, the system displays the following message:

```
The installation of the CONVERSANT VIS V4.0 Year 2000
Update is now complete.
```

Proceed to the section "Guidelines for Reviewing Your Applications" if you had the system convert, verify, and install your applications. If you did not, you must do so before modifying your applications. See the following for instructions:

■ For manually converting your applications to Script Builder, see "Converting Script Builder Applications" in this document.

■ For verifying and installing your applications, see *CONVERSANT VIS Version 4.0 Script Builder*, 585-350-704.

Converting Script Builder Applications

The CONVERSANT VIS 4.0 Year 2000 Update contains a new version of Script Builder (Version_4.0.y2k) that allows for seasonal greetings and holidays after 1999. During the conversion process, the system alters each application's parameters file (for example, /att/trans/sb/<*application*>/parameters) as follows:

- Updates the parameters file to reflect the new Script Builder version number

- Expands the year field to four digits for the Holidays and Seasonal Greetings listed in the parameters file

Converting During Installation: During installation of the CONVERSANT VIS 4.0 Year 2000 Update, you are asked if the system may convert your existing applications to the new version of Script Builder. If you chose to convert Script Builder during installation, you are not required to take any further steps to complete the conversion.

Converting Manually: If you did not convert your applications to the new version of Script Builder during the installation of the CONVERSANT update, you must do so manually before using Script Builder. Take the following steps to run the conversion manually:

1. Enter the following at the UNIX prompt:

   ```
   sb_conv [name of application ] Version_4.0.y2k
   ```

   For example, if the name of the application is "banking," you would type:
   ```
   sb_conv banking Version_4.0.y2k
   ```

   The system updates your applications and displays the following message for each application it converts:

   ```
   Converting <application name>
   ```

   When the application is converted, the system displays the following message and then continues on to the next application:

   ```
   Conversion completed
   ```

2. After you have converted your applications, verify and install your applications. See *CONVERSANT VIS Version 4.0 Script Builder*, 585-350-704, for instructions.

Required Additional Actions

This section describes the actions you must take during or after installation of the updates to ensure that your system operates correctly.

Convert Script Builder Applications

If you did not choose to convert your applications to the new version of Script Builder during installation of the CONVERSANT VIS V4.0 Year 2000 Update, you must do so manually before you use Script Builder. See the section "Converting Script Builder Applications" for the procedure for manual conversion.

If you have not converted your applications, and you try to use Script Builder, you will receive a message stating:

```
This application is of a version that is not compatible with
this Script Builder package. You must do a compatibility
conversion using the "sb_conv" command.
```

Guidelines for Reviewing Your Applications

All CONVERSANT VIS applications should be evaluated for year 2000 compliance review. This section provides guidelines to help you review your applications and is organized into the following areas:

1. Assess your resources

2. Familiarize yourself with the areas affected by year 2000

3. Determine which applications need to be reviewed. It is likely that any applications using two-digit years will need to be modified.

4. Review, modify, and test the appropriate applications

   ⇒ **NOTE:**
   Lucent Technologies *strongly recommends* that you contract with a software provider to test your applications. If you do choose to test your applications yourself, be sure that you test on a non-production machine. For further information, see "Guidelines for Testing Your Applications" in Appendix A, "For Advanced Users".

Assess Your Resources

Before you begin modifying your applications, determine the following and estimate any possible costs:

- Was your application developed in-house? If you contracted with an outside vendor, contact the vendor to discuss year 2000 compliance for the application. If you contracted with Lucent Technologies, contact your Lucent Technologies Account Representative.

- Do you have the expertise in-house to review your applications for compliance? If you do not, contact your Lucent Technologies Account Representative for help in connecting you to a software provider.

- Does the application source code reside in-house, or did a software vendor provide the object code only? If a software vendor retained the source code, contact the vendor to discuss year 2000 compliance for the application.

- Do you have Script Builder software to make the necessary changes? If not, then contact the application developer who wrote the application.

Familiarize Yourself with Areas Affected

In the section "Areas Affected" at the beginning of this document, Table 1 describes the areas that are affected by the year 2000. Review this table thoroughly so that you can more easily identify the areas within your own applications that will require modification.

Also note the section "Areas Requiring Additional Consideration" near the end of this document, which describes the areas of your system that might require alternative or corrective actions.

Determine the Applications to Be Reviewed

Examine your applications to determine which ones will be affected by year 2000 issues. Of those applications that require review, determine when the data is impacted—some applications may be affected well before January 1, 2000. You can use the following general guidelines to help determine the applications that need to be reviewed.

1. Determine all applications that have date-related information that is collected, stored, manipulated, spoken, recognized, or reported. If an application does not in any way handle date-related information, it might not need to be reviewed.

2. Determine if the data used by an application will span into the 21st century (years 2000-2999). If so, when? For example, if you ask callers to input their credit card expiration date, is that date already in the 21st century? If yes, your application may already be impacted. If your data always remains in the current year, your solution may not be affected until

the year 2000. Be aware that some applications can be affected in the last hours of December 31, 1999 (see "Areas Requiring Additional Consideration").

3. Determine if you have any applications that will be replaced prior to year 2000 and that do not handle date-related information involving years in the 21st century. These applications may not need to be reviewed.

➡ **NOTE:**

It is best to review all applications thoroughly unless you are certain that an application will not be affected.

Review, Modify, and Test Your Applications

In most cases, the most time-consuming portion of making your system year 2000 compliant involves reviewing your applications for non-compliant behavior. If areas are found, they usually require only minor changes to become compliant, such as replacing a hard-coded "19*xx*" with something more appropriate. After making modifications, each application must be tested thoroughly to make sure it operates correctly.

Review Checklist

Use the checklist below as a guide in reviewing your voice response solution for year 2000 compliance. The list describes areas to investigate for year 2000 compliance, but it is not intended to be exhaustive. Each customer may have unique year 2000 compliances issues based on the current configuration and applications. Areas to examine include:

■ Applications that assume "19xx" when collecting, storing, manipulating, or speaking years.

■ Date-related information that uses two-digit years (such as, 98, 99, 00). In most cases, using a four-digit year ensures fewer errors are made in manipulating, comparing, storing, or speaking the year. Changing your application to accept four-digit years may require re-recording the prompts which ask callers for this data.

■ Applications that manipulate dates (for example, calculating age, expiration date, and so on). Test to ensure correct operation when the dates involved span the 20th and 21st century, and when in the 21st century.

■ Custom written shell scripts or data interface processes (DIPs) that accept or display date-related information, such as a custom call data report that accepts a date as input. Test to ensure that years beyond 1999 are accepted and output correctly.

■ Custom cron (automatically scheduled) jobs. Test to ensure execution beyond the 20th century.

■ Host database records. Review for the year format. Existing host date fields are not changed automatically when you install the V4 Year 2000 Update. The application developer must review the host database records and determine if any changes are needed. For example, an application might benefit from using the new YT<*threshold*> format described in "Use New Formats for Script Builder Host Input date Fields".

■ Host databases that contain records using a two-digit year, and the century is context dependent. The application developer must include some post processing after the year is retrieved and translated by the host DIP.

■ Applications that use spoken dates, specifically with a two-digit year. Test to ensure that end customers find acceptable the spoken format for years beyond 1999. See Table A-1 in Appendix A, "For Advanced Users" for recommended formats.

Customized Applications

Almost every CONVERSANT system has some type of customized application loaded. This application may include scripts, custom menus, custom reports, and so forth. Because of the unique nature of each custom application, year 2000 compliance for many custom components falls outside the responsibility of Lucent Technologies. You are, therefore, responsible for ensuring that your CONVERSANT custom applications can continue to operate through the year 2000. Lucent Technologies *strongly recommends* that you work with a software provider to test these applications.

Developing Compliant Applications

This section provides information on the following topics to help you construct applications that are year 2000 compliant:

■ Use four-digit years whenever possible

■ Use new formats for Script Builder date fields for host input

■ Adapt your method for processing dates later than the year 2038

Use Four-Digit Years

When modifying existing applications and developing new ones, always use four-digit years whenever possible. Using four-digit years eliminates the issues surrounding system interpretation of the century for two-digit years.

Use New Formats for Script Builder
Host Input date Fields

The CONVERSANT VIS V4.0 Year 2000 Update provides formats for host date fields to accommodate dates in the 21st century, as well as a host date field (YT<*threshold*>) for two-digit years that supports a range of 100 years. You now have the following three formats to use to designate a year for a host date field:

- Y — Indicates a two-digit year in the *current* century on the host.

- YY — Indicates a four-digit year on the host.

- YT<*threshold*> — Use this format when an application is receiving a two-digit year from an IBM host. You define a threshold that determines which century is assigned. See the next section for details.

The YT<*threshold*> Format

The YT<*threshold*> format allows you to specify a threshold from 0 through 100 to use when applications receive two-digit years from an IBM host. With this format, the two-digit year input (*yy*) received from the host will be placed into a 100-year time period that you define when you specify the threshold. (For example, a threshold of 50 defines the 100-year span as 1950 through 2049.) If the input year *yy* is equal to or greater than the specified threshold, the year is translated to 19*yy*. If the year *yy* is less than the specified threshold, the year is translated to 20*yy*.

To determine an appropriate threshold, analyze the range of dates required per date field from the host. For example, if the range of dates falls between 1940 and 2039, use a threshold of 40 (YT40). If the format is YT40 and an input year from the host is 45 (equal to or greater than 40), the year is translated into 1945. If the input year from the host is 37 (less than 40), the year is translated into 2037.

For a 100-year span of 1900 through 1999, use the format YT0; for the years 2000 through 2099, use YT100.

This threshold is defined in the host screen definition field for the application. See "Defining Screen Fields" in *CONVERSANT VIS Version 4.0 Script Builder*, 585-350-704, for instructions on how to define host screen definition fields and for detailed information on defining host input date fields.

Available Formats

Table 1 shows some examples of formats that are now available for you to use when defining host input into a date field. Note that although most of the examples below use the order of *month day year*, the formats support other sequences, such as *year month day*.

> **NOTE:**
> Two-digit years in "current-century format" assume "19" or "20" as the century, according to whether the current century is 19*xx* or 20*xx*. For example,11/23/05 is interpreted as November 23, 2005, when the current century is the 21st. However, if the current century is the 20th century (19xx), the system will interpret 11/23/05 to be 1905.

Table 1. Examples of Host Input into a *date* Field

Format	Description
D	Date in *month day year* format, regardless of the separators used. The month is by digit or name and the year can be in two or four digits, with two-digit years in current-century format.
DM/D/Y	Date in *month/day/year* format with *year* in the current century, such as 11/23/98, 01/02/01, or 1/2/01 (default) with slashes (/) as separators.
DM-D-Y	Date in *month-date-year* format with *year* in the current century, such as 11-23-98, 01-02-01, or 1-1-01 (default) with hyphens (-) as separators.
DM.D.Y	Date in *month.date.year* format with *year* in current-century format, such as 11.23.98, 01.02.01, or 1.2.01 (default) with periods (.) as separators.
DM/D/YY	Date in *month/date/year* format, such as 11/23/1998 or 01/02/2001, with slashes (/) as separators.
DMBD,BYY	Date in *month date, year* format, such as November 23, 1998, or January 2, 2001.
DYY.M.D	Date in four-digit *year.month.day* format with periods (.) as separators, such as 1998.11.23 or 2001.1.2
DM/D/YT*<threshold>*	Date in *month/day/year* format with slashes (/) as separators, such as 02/25/98 or 11/17/01. The threshold is defined in the host field definition and then compared to the input from the host to determine if the century is "19" or "20".

Continued on next page

Table 1.   Examples of Host Input into a *date* Field — *Continued*

Format	Description
DM-D-YT<*threshold*>	Date in *month-day-year* format with hyphens (-) as separators, such as 10-05-97 or 02-27-05. The threshold is defined in the host field definition and then compared to the input from the host to determine if the century is "19" or "20".
DYT<*threshold*>.M.D	Date in *year.month.day* format with periods (.) as separators, such as 99.10.03 or 01.10.03. The threshold is defined in the host field definition and then compared to the input from the host to determine if the century is "19" or "20". For example, DYT50.M.D uses a threshold of 50 to indicate the 100-year span of 1950 through 2049.

Adapt Date-Processing Methods for Year 2038

The UNIX operating system supports dates between January 1, 00:00:00, 1970 Greenwich Mean Time (GMT) and January 19, 03:14:07, 2038 GMT, as shown in Table 3. If you use UNIX functions to process date data, dates cannot exceed January 19, 03:14:07, 2038 GMT. Your CONVERSANT application can, however, process dates past this date by switching to the methods described in "Alternative Methods".

Table 3.   Range Supported by UNIX Operating System

Earliest date supported by UNIX	Last date supported by UNIX
January 1, 00:00:00 1970 (GMT)	January 19, 03:14:07 2038 (GMT)

How UNIX Calculates Time

The UNIX operating system calculates the current time based on the starting point of January 1, 00:00:00, 1970 GMT (referred to as the *Epoch*). To determine the current day, the UNIX operating system keeps track of the number of seconds that have occurred since the Epoch in a data type *time_t*, which is defined with a 32-bit internal date representation.

Because the data type *time_t* is based on a signed 32-bit value, the maximum date that UNIX can represent is January 19, 03:14:07, 2038 GMT. You can set the UNIX operating system date to any point in this range and have accurate results regarding the system day and time. However, you cannot use UNIX functions to process dates exceeding the last supported date of January 19, 03:14:07, 2038 GMT.

Script Builder Example

The Script Builder *datetime_u* and *u_datetime* external functions are used to process dates and could be involved in processing values that exceed the last date supported by UNIX 3.2.3. These external functions do not work if the date converts to a UNIX 3.2.3 time that is greater than this value.

For example, in an application that requires adding 30 days to a date, CONVERSANT Script Builder application developers might have used the *datetime_u* and *u_datetime* functions to handle date arithmetic as follows:

1. The *datetime_u* function converts the date (in *CCYYMMDD* format) and time (in *HHMMSS* format) to the UNIX representation of time as the number of seconds since the Epoch.

2. Thirty days is added by multiplying 30 times the number of seconds in a day and adding that value to the UNIX time.

3. The *u_datetime* function converts the UNIX time (in seconds since the Epoch) back to a regular date (in *CCYYMMDD* format) and time (in *HHMMSS* format).

If the value achieved in step1 or step 2 is greater than the value for January 19, 03:14:07 2038 GMT, the *datetime_u* and *u_datetime* functions will not work.

Alternative Methods

If your application must process dates beyond the last date supported by UNIX, you can use the following alternatives:

- Use the ORACLE database. This database has many date functions that can be accessed by writing a C-language data interface process (DIP). CONVERSANT can call this DIP to handle date arithmetic. Some ORACLE date functions are listed below. See the ORACLE documentation for more information on date functions.

    — ADD_MONTHS — to add some number of months to a given date

    — LAST_DAY — to compute the last day of the given month

    — MONTHS_BETWEEN — to compute the number of months between two given dates

    — NEW_TIME — to compute the date and time in a different time zone

    — NEXT_DAY — to compute the first day of the week that is equal to or later than a given day

- Use your own date processing functions to manipulate dates and handle any date arithmetic needed by your applications. Ensure that the functions correctly handle calculations involving leap years, if appropriate.

Areas Requiring Additional Consideration

The following sections describe additional areas of your system related to year 2000 issues that you should take into consideration. These areas are minor and should not impact customer applications. Some areas may require a small corrective action to perform as intended. You should become familiar with all of these areas so that you can address them if necessary.

CONVERSANT Areas

This section describes the areas of the CONVERSANT system that have behavior that differs from the documented behavior for before the year 2000.

Log File Display Date

The log file **/usr/faxdb/spool/fax/logs/faxdaily.log** displays the year in 3 digits, where 100 represents year 2000, 101 represents year 2001, and so forth. For example, the log file represents Jan 1, 2000, at 1:32 AM as "01 01 **100** 01 32".

Call Classification Report

The Call Classification Report does not handle input consistently when a user enters an invalid start or end date. For example, if the end date is mistakenly entered as a date *before* the start date, the system may not produce an error, and no call records will be displayed. If the user correctly enters valid start and end dates (end date *after* the start date), the call data is shown as usual. To avoid this problem, make sure that you enter the date correctly.

Time Zone Differences on December 31, 1999

Be aware that some of your applications could be affected because of different time zones. During either the last hours of December 31, 1999, or the beginning hours of January 1, 2000, the following two areas could yield inaccuracies if an application is using two-digit years. Using four-digit years will prevent these errors from occurring.

- Applications inserting a two-digit year into a Script Builder database table
- Applications accepting a two-digit year in a Script Builder Host date field (the Y format for the year field) from an IBM host

In both types of applications, the CONVERSANT system converts the two-digit year to a four-digit year by adding the current century, either "19" or "20", to the front of the two-digit value. The CONVERSANT system uses Greenwich Mean Time (GMT) to determine the current century. (GMT is a standard method of measuring time on a 24-hour clock.) Inaccuracies can occur because of the time difference between midnight for GMT and midnight for the time zones for your applications.

At 12:00 a.m. (midnight) on 1/1/2000 in the GMT zone, the CONVERSANT system will begin to insert the century digits of "20" to all two-digit years, regardless of the time zones in which your applications are running.

For example, if the application is in Tokyo, Japan, it will be 9:00 a.m. on 1/1/2000 when it is 12:00 a.m.(midnight) for GMT. Therefore, during the first nine hours of 1/1/2000 in Tokyo, you could have applications that will still be inserting century digits of "19" when the current century for that location has already changed to 2000. Conversely, if the application is in South America, 12:00 a.m. (midnight) for that system will occur after it is midnight for GMT. Therefore, during the last hours of 12/31/1999 in South America, you could have applications that will be inserting century digits of "20" while the current century for that location is still 1999.

Table 4 shows the relation of GMT to some sample time zones and the hours that are vulnerable for this kind of inaccuracy on 12/31/1999 and 1/1/2000. Note that these times do not consider time changes due to daylight savings time.

Table 4.   GMT and Sample Time Zones

Hourly Difference from GMT	Cities	Time When It Is 12:00 a.m. GMT	Window for Error
-3	Brasilia Buenos Aires	9:00 p.m. on Dec. 31, 1999	3 hours (9:00 p.m. of Dec. 31, 1999 to 12:00 a.m. of Jan.1, 2000)
0 **GMT**	Greenwich London	12:00 a.m. (midnight) on Jan. 1, 2000	None
+1	Berlin Paris	1:00 a.m. on Jan. 1, 2000	1 hour (12:00 a.m. to 1:00 a.m.)
+5.30	Bombay New Delhi	5:30 a.m. on Jan. 1, 2000	5 1/2 hours (12:00 a.m. to 5:30 a.m.)
+9	Tokyo Osaka	9:00 a.m. on Jan. 1, 2000	9 hours (12:00 a.m. to 9:00 a.m.)
+10	Melbourne Sydney	10:00 a.m. on Jan. 1, 2000	10 hours (12:00 a.m. to 10:00 a.m.)

Database Time Field

If a CONVERSANT database record containing a time field was created before the year 2000, a user will be unable to query, modify, or delete the record if it is accessed on or after 1/1/2000. This problem is fixed in CONVERSANT VIS Year 2000 Update — Patch 1, QPPCN 1169, which is being sent to all CONVERSANT customers who have purchased the CONVERSANT VIS V4.0 Year 2000 Update Kit.

It is strongly recommended that customers install the update patch. However, if you require a method to work around the problem without using the patch, see "Alternative Methods for Database Records with Time Fields" in Appendix A, "For Advanced Users".

UNIX Areas

This section describes the areas of UNIX whose behavior differs from the documented behavior for before the year 2000, as well as showing the areas that are no longer supported.

face Utility

Problem. The face utility functions correctly, but the date at the top of the output screen continues to display "19*xx*".

Corrective Action. Adjust the menu screen that displays the date. Use the procedure below.

➡ **NOTE:**
This procedure requires that you edit a file using a UNIX-based editor, such as /bin/vi. Please do not attempt to perform this procedure unless you are comfortable using a UNIX-based editor.

1. Log in as **root**

2. At the UNIX prompt, enter **cd /usr/vmsys/OBJECTS/pref**

3. At the next UNIX prompt, enter **vi Form.color**

   The Form.color file is displayed.

4. In the fourth line of text in this file, replace **19%y** with **%Y**, as follows:

   Change: ```done=`indicator -w;echo "banner=\"  AT&T FACE - \`date '+%h``
   `` %d, 19%y'\`\"```

   To: ```done=`indicator -w;echo "banner=\"  AT&T FACE - \`date '+%h``
   `` %d, %Y'\`\"```

5. Save the file and exit vi.

6. To activate the change, perform this save procedure:

    a. At the UNIX prompt, enter **face** to display the FACE screen.

    b. Select `Office of Root`

    c. Select `Preferences`

    d. Select `Color Attributes`

    e. Select F3 (Save).

    f. Select F6 (Cancel) repeatedly until the initial FACE screen is displayed.

    g. Select `Exit`

    h. Select F3 (Continue) to complete the exit.

Result. The date at the top of the face output screen displays the correct century.

passwd Command

Problem. When a user invokes the **passwd -s -a** command in or after the year 2000, password-change dates display the year in three digits instead of two digits. The passwd command used with the **-s -a** options displays information about the password settings (but not the specific passwords) for all users of the system. Included in this information is the date that a password was last changed, unless the password is locked (LK) or none exists (NP). The date displayed for an existing, unlocked password will, for example, represent the year 2000 as 100 instead of the 00, and the year 2015 as 115 instead of 15.

Alternative Action. View the password information for users individually. Instead of using the **-a** option, which displays information for all users, use the command **passwd -s <*username*>** (for example, **passwd -s root**) and view information for a specific user.

Result. The password-change date displays a two-digit year.

ctime Library Functions

This section describes the localtime, gmtime, ascftime, and cftime UNIX ctime library functions, all of which require minor corrective actions or alternative methods in order to produce correct output. Most corrective actions involve appending a modulous 100 to the tm_year structure.

localtime() and gmtime()

Problem. The tm_year structure in these routines calculates the number of years elapsed since 1900. After 1999, two-digit years will print in three digits. For example, the year 2036 will print as "136" instead "36".

Sample. The following shows sample code for the localtime function. The tm_year structure is indicated in bold.

```
#include <sys/types.h>
#include <time.h>
char *mon[] =
{
   "January",
   "February",
   "March",
   "April",
   "May",
   "June",
   "July",
   "August",
   "September",
   "October",
   "November",
   "December"
};
main()
{
   time_t clock();
   time_t curtime;
   struct tm *localtime();
   struct tm *tptr;
   time( &curtime );
   tptr = localtime( &curtime );
   printf( "The current date is: %s %d, %.2d\n", mon[tptr->tm_mon],
           tptr->tm_mday, tptr->tm_year );
}
```

Corrective action. Append a modulous 100 to the tm_year structure. In the preceding sample, you would make the following change, as noted in bold:

Replace:
```
printf( "The current date is: %s %d, %.2d\n", mon[tptr->tm_mon],
                tptr->tm_mday, tptr->tm_year );
```

with:
```
printf( "The current date is: %s %d, %.2d\n", mon[tptr->tm_mon],
                tptr->tm_mday, tptr->tm_year % 100 );
```

Result. Table 5 shows results for the above sample code, before and after appending the modulous 100, for the date of February 9, 2036.

Table 5.   Sample localtime Results for February 9, 2036

Before Corrective Action	After Corrective Action
The current date is: February 9, **136**	The current date is: February 9, **36**

cftime()

Problem. The %D field descriptor (%m/%d/%y format) and the %y field descriptor (year within century, 00-99) use two-digit years and produce unacceptable results for 21st century dates. The %Y field descriptor (four-digit year) prints accurately. For example, the year 2036 prints as follows:

- %D output for the year: =6
- %y output: =6

Corrective Action. Use the ascftime function.

ascftime()

Problem. The %D field descriptor (%m/%d/%y format) and the %y field descriptor (year within century, 00-99) use two-digit years and produce unacceptable results for 21st century dates. The %Y field descriptor (four-digit year) prints accurately. For example, the year 2036 prints as follows:

- %D output for the year: =6
- %y output: =6

Sample. The following shows sample code for the ascftime function. The field descriptors are indicated in bold.

```
#include <sys/types.h>
#include <time.h>
main()
{
  char str[40];
  time_t clock();
  time_t curtime;
  struct tm *localtime();
  struct tm *tptr;
  time( &curtime );
  tptr = localtime( &curtime );
```

```
    ascftime( str, "%D"' tptr );
    printf( "The current date is: '%s'\n", str );

    ascftime( str, "%B %e, %y"' tptr );
    printf( "The current date is: '%s'\n", str );
}
```

Corrective action. Append a modulous 100 to the tm_year structure. In the preceding sample, you would add the following instruction:

Add: **tptr->tm_year = tptr->tm_year % 100;**

Example: tptr = localtime(&curtime);
        tptr->tm_year = tptr->tm_year % 100;

Result. Table 6 shows the results for the above sample code, before and after appending the modulous 100, for the date of February 9, 2036.

Table 6.   Sample ascftime Results for February 9, 2036

Desc.	Before Corrective Action	After Corrective Action
%D	The current date is: '02/09/**=6**'	The current date is: '02/09/**36**'
%y	The current date is: 'February 9, **=6**'	The current date is: 'February 9, **36**'

Areas No Longer Supported

The following UNIX subsystems are not supported once you have installed the UNIX System V/386 3.2.3 Year 2000 Update. These routines do not affect the CONVERSANT voice system or existing applications.

- UNIX Accounting subsystem
- UNIX SCCS subsystem (for example, the SCCS command)

Removal Procedures

This section give procedures for removing the UNIX System V/386 3.2.3 Year 2000 Update and the CONVERSANT VIS V4.0 Year 2000 Update. The 486 BIOS Version 2.1g update cannot be removed once it has been installed.

Removing the UNIX System V/386 3.2.3 Year 2000 Update

Use the following procedure if it is necessary to remove the UNIX System V/386 3.2.3 Year 2000 Update.

1. Stop the VIS system. You can type **stop_vs** and press ⌑ENTER⌑. See the procedures given in *CONVERSANT VIS Version 4.0 Maintenance,* 585-350-112, if you need further instruction.

2. At the prompt, type **removepkg**, and then press ⌑ENTER⌑.

   The system displays a numbered list of installed packages.

3. Type the number associated with the UNIX System V/386 3.2.3 Year 2000 Update, and then press ⌑ENTER⌑.

   The system displays the following message:

   ```
   Do you really want to remove the UNIX System V/386 3.2.3
   Year 2000 Update?
   Strike ENTER when ready
   or ESC to stop
   ```

4. Press ⌑ENTER⌑.

   The system displays the following message when the removal is complete:

   ```
   The UNIX System V/386 3.2.3 Year 2000 Update is now
   removed.
   ```

Removing the CONVERSANT VIS V4.0
Year 2000 Update

Use the following procedure to remove the CONVERSANT VIS V4.0 Year 2000 Update. When you remove the update, your applications are converted back to the V4.0 version of Script Builder.

NOTE:

If the Voice System is currently running, it will be stopped during removal of this update. The system will prompt you near the end of the removal process for permission to restart the Voice System.

1. Log in as root.

2. At the prompt, type **removepkg**, and then press ENTER.

   The numbered list of installed packages is displayed.

3. Type the number associated with the CONVERSANT VIS V4.0 Year 2000 Update, and then press ENTER.

   The system displays the following message:

   ```
   Do you really want to remove the CONVERSANT VIS V4.0
   Year 2000 Update?
   Strike ENTER when ready
   or ESC to stop
   ```

4. Press ENTER to continue with the removal process.

   The system proceeds with the removal process. If the Voice System is currently running, the system prompts you for permission to shut down the Voice System:

   ```
   Is it okay to stop the Voice System at this time?
   (y/n) [y]
   ```

5. Press ENTER to stop the Voice System and continue with the removal process. If you enter **n**, the removal will stop. If you enter **y**, the system displays the following message:

   ```
   The Voice System is now stopping
   ```

6. When the update has been removed, the system displays the following message before asking you if you want to start the Voice System:

   ```
   The CONVERSANT VIS V4.0 Year 2000 Update is now removed.
   ```

7. The system prompts you for permission to restart the Voice System. Enter one of the following:

- **y** (yes) to start the Voice System.The system prompts you for permission to verify and install your applications. You must verify and install your applications, either now or later, in order to take advantage of the features provided by this update. The process of verifying and installing your applications can take up to twenty minutes if you have many applications. Enter one of the following:

    — **y** (or just press (ENTER)) to proceed with the verification and installation.

      The system verifies and installs all applications and stores the results in a file named /readme.out

      To view the results, type **pg /readme.out**

    — **n** to omit verification and installation of your applications. You will need to verify and install your applications on your own after the installation is completed.

- **n** (no) to have it remain stopped. If you select **n**, the system will not prompt you to have your applications verified and installed. You will need to verify and install your applications on your own after the installation is completed.

8. You are now ready to verify and install your applications. See *CONVERSANT VIS Version 4.0 Script Builder*, 585-350-704, if you need instructions.

Support for This Product

It is the intent of Lucent Technologies to provide services support as follows for CONVERSANT VIS 4.0, with the Year 2000 Update Kit installed:

- Maintenance contracts can be renewed through 12/31/99, for one year.

- Support will be provided on a "best efforts — time and materials" basis from 1/1/2001 through 12/31/2001.

Services for AUDIX Voice Power and FAX Attendant, when loaded on a CONVERSANT VIS V4.0 system with the Year 2000 Update Kit installed, are as follows:

- Maintenance contracts for AUDIX Voice Power and FAX Attendant can be renewed through 12/31/1998, for one year.

- Support will be provided on a "best efforts — time and materials" basis from 1/1/2001 through 12/31/2001.

This policy is predicated on parts and personnel availability.

For Advanced Users

A

Overview

This appendix contains the following information designed to help advanced users:

- Spoken formats for speaking dates after the year 2000 — Descriptions of the formats for speaking dates after the year 2000 in U.S. English Enhanced Basic Speech and U.S. English Text to Speech.

- Guidelines for testing your applications — General guidelines for testing for year 2000, should you choose to test your own applications. Note that Lucent Technologies *strongly recommends* that you contract with a software provider to test your applications.

- Alternative methods for the database records with time fields — Descriptions of the problem involving the time fields in database records, the update that fixes it, and alternative methods to work around it.

Spoken Formats for Speaking Dates

Table A-1 describes how dates are spoken after 1999 for the formats for U.S. English Standard Speech and U.S. English Text to Speech (TTS). These formats take effect after you have installed the updates in the CONVERSANT VIS V4.0 Year 2000 Update Kit.

➡ **NOTE:**
A format ending in "Y" indicates a two-digit year, and a format ending in "YY" indicates a four-digit year.

U.S. English Standard speech formats begin with "D", and U.S. English TTS formats begin with "A".

Table A-1. Formats for Speaking Dates

Date Formats	Years	Spoken Formats	Examples
2-digit formats:	2000	zero-zero	"zero-zero"
DMDY, DMSPDY, ADMDY, or ADMSPDY	2001 – 2009	zero-<*year*>	"zero-five" for 2005 (Previously "oh-<*year*>" for US English Enhanced Basic Speech)
	> 2009	<*year*>	"ten" for 2010
4-digit formats:	2000	Two thousand	"two thousand" (Previously "twenty zero-zero" for ADMDYY format)
DMDYY, DMSPDYY, ADMDYY, or ADMSPDYY	2001 – 2009	Two thousand <*year*>	"two-thousand-five" for 2005 (Previously "twenty-oh-<*year*> for US English Enhanced Basic Speech and ""twenty-zero<year>" for US English TTS)
	> 2009	Twenty-<*year*>	"twenty-ten" for 2010

Guidelines for Testing Your Applications

You are responsible for ensuring that your INTUITY CONVERSANT custom applications can continue to operate through the year 2000. Lucent Technologies *strongly recommends* that you work with a software provider to test your applications. However, if you choose to do this work yourself, we offer these general guidelines for testing for year 2000.

Before You Begin

Before you start to test your applications, review the following list and perform any necessary procedures. Proper preparation is crucial for successful testing.

- Ensure that you have installed the CONVERSANT VIS V4.0 Year 2000 Update Kit before you begin testing. (If you have a 486 processor, make sure you have installed the 486 BIOS version 2.1g update that is included in the kit.)

- Do all year 2000 testing on a machine that does *not* take live call traffic at any time, either during or after your testing.

- Perform a complete backup (mkimage) of the system. This step is critical because you will need to restore your system from this backup after you are done testing. Some features, such as reports or error logging, might not operate correctly after you have set the system date ahead to 2000 and then back to the current year. For instructions on backing up your system, see Chapter 3, "Common System Procedures" in the maintenance book for your platform.

- Have a written test plan ready.

Testing Guidelines

Use the following steps as a guide in testing applications for year 2000:

1. With the system set at the current date:

   a. Test all applications, custom reports, custom menus, and so on. Ensure that all applications are working.

   b. Record your results on your written test plan.

2. Set the system date to December 31, 1999, at 11:00 p.m.

   We recommend setting the time to 11:00 p.m. If you set the system time too close to midnight, some UNIX processes might fail. By setting the time to 11:00 p.m., the system will advance normally to midnight without these failures. To set the date and time ahead, do the following:

   a. Log in as **root**

   b. At the UNIX prompt, enter **face**

The system displays the FACE screen.

c. Select `System Administration` and press ENTER.

d. Select `Date and Time` and press ENTER.

The Change Date and Time screen is displayed.

e. Change the date and time.

f. Press F3 (Save) to save your changes.

The system displays a message confirming the new date and time.

g. Press F3 (Cont) to continue.

The system date is updated.

h. Press F6 (Cancel).

i. Select `exit` and press ENTER

j. Press F3 (Confirm).

You are returned to the UNIX prompt.

3. Shut down and restart the system. This step ensures that all system processes are updated with the new date and time of the system.

⚠ CAUTION:

If you do not shut down and restart the system after you have set the date ahead, some UNIX processes could fail and compromise your test efforts.

To shut down and restart the system, follow these steps:

a. At the UNIX prompt, enter **cd /**

b. At the next UNIX prompt, enter **/etc/shutdown –g0 –y**

After a few moments, the system displays the following message:

`The system is down. Reboot the system now.`

c. Press CONTROL ALT DELETE.

4. After the system has restarted, begin testing custom applications and all other components that you tested in Step 1. Be sure to do the following:

■ Have a written test plan and record your results.

■ Start your testing at a time before your system time reaches midnight, and continue to test through the rollover to 2000.

■ Ensure that some test calls begin in year 1999 and end in 2000.

■ Continue to run calls through the system for some time after the system date reaches 2000.

5. Review the results of the testing in Step 4 with that done in Step 1. You should expect that your custom applications, reports, and so forth all work the same before and after 2000. All custom menus or commands that accept years should allow data to be entered as "2000" or "00", whichever is appropriate.

6. When you are satisfied that your custom applications work beyond 2000, set the system back to the current date and time using the **face** command:

   a. Log in as **root**

   b. At the UNIX prompt, enter **face**

      The system displays the Face screen.

   c. Select `System Administration` and press ⦋ENTER⦌.

   d. Select `Date and Time` and press ⦋ENTER⦌.

      The Change Date and Time screen is displayed.

   e. Change the date and time.

   f. Press ⦋F3⦌ (Save) to save your changes.

      The system displays a message confirming the new date and time.

   g. Press ⦋F3⦌ (Cont) to continue.

      The system date is updated.

   h. Press ⦋F6⦌ (Cancel).

   i. Select `exit` and press ⦋ENTER⦌

   j. Press ⦋F3⦌ (Confirm).

      You are returned to the UNIX prompt.

7. Restart the system:

   a. At the UNIX prompt, enter **cd /**

   b. At the next UNIX prompt, enter **/etc/shutdown –g0 –y**

      After a few moments, the system displays the following message:

      `The system is down. Reboot the system now.`

   c. Press ⦋CONTROL⦌ ⦋ALT⦌ ⦋DELETE⦌ to restart the system.

8. Restore the system from the mkimage tape. For instructions on restoring your system, see *CONVERSANT VIS Version 4.0 Maintenance,* 585-350-112. If you do not restore your system from the mkimage tape, the system may not operate correctly, as some files on the system now have timestamps in the future.

   In and after the year 2000, the top of the Face utility screens continues to display "19" as the century, unless you take the corrective action described in "Areas Requiring Additional Consideration" on page 24. Note that the "19" is display output only; the correct century is displayed on the screens for setting the date and time.

Alternative Methods for Database Records with Time Fields

If a CONVERSANT database record contains a time field and was created *before* the year 2000, the CONVERSANT application will not be able to perform the following actions if the record is then accessed *after* the year 2000:

- Query a record using the time field as the search criteria

- Modify a record in the table containing the time field

- Delete a record in the table containing the time field

For example, this problem might occur in a CONVERSANT application that accepts calls from people requesting a catalog (a "form-filler" kind of application). The application records the caller's voice input, such as name and address, and stores the voice-phrase tags in a local database table. It also stores the date and time of the call using a time field. Later, an agent calls into the CONVERSANT system to transcribe the caller's information so the catalog can be sent. Typically, the agent listens to the record and then deletes it once the mailing has been invoked. If the caller calls in before year 2000, and the agent tries to transcribe on or after 1/1/2000, the agent can listen and transcribe the caller's responses but cannot delete those records in the database.

This problem does *not* occur if the record with a time field is created and accessed within the same century. Also, applications that represent time with the $UNIX_TIME timestamp or a character field are not affected.

About the Update Patch

This problem is fixed in CONVERSANT VIS Year 2000 Update — Patch 1, QPPCN 1169, which is being sent to all CONVERSANT customers who have purchased the CONVERSANT VIS V4.0 Year 2000 Update Kit. It is recommended that customers install the update patch. However, this section gives procedures you can use if you need a method to work around the problem without using the update patch. Note that the update patch can be installed at any time, but the alternative methods must be performed at the end of 1999, after the last call of 1999 and before the first call of year 2000.

Before the update is installed, the CONVERSANT database table time fields are stored in an ORACLE database date field, which contains both a date and time. If values are assigned to a CONVERSANT database table time field (through manual editing or by a CONVERSANT application), the CONVERSANT ORACLE database interface process (DIP), **/vs/bin/vrs/oraldb**, stores a dummy value in the date portion of the ORACLE date field. Then, when accessing the CONVERSANT database time fields, the **oraldb** DIP file queries the record using both the time and dummy date.

After installing CONVERSANT VIS Year 2000 Update, Patch 1, ORACLE supplies a default value for the date when storing a CONVERSANT database time field. When inserting a value into a CONVERSANT database time field, the **oraldb** file provides only the time portion and lets ORACLE insert the first day of the month as the standard value for the date portion. Also, the **oraldb** file now does not query or access a record using the date portion of the field; it only uses the time portion of the field to query or access a record.

Alternative Methods

The following methods are available if you need to work around the problem without using the update patch. Both methods must be performed at the end of 1999, after the last call that could insert records in the 20th century and before the first call that could access or insert records in the 21st century. Each is described in more detail below.

- Transcribe before 2000

- Adjust the date using SQL commands (for qualified application developers only)

    ⇒ **NOTE:**
    Even if you use this alternative method, Lucent Technologies recommends you install the update patch at the next convenient time. The changes you make can be lost, for example, if a previous backup is loaded in error.

Transcribing

For some types of applications, such as the form-filler example previously described, problems with the database time field can be avoided by transcribing all existing caller records in the database before the first call is taken in year 2000.

Using SQL Commands to Adjust the Date

Transcribing is not an appropriate solution for some types of applications. In such cases, you can adjust the date portion of the database time fields using SQL commands. The date portion is changed from Jan 01, 1901, to Jan 01, 2001. Note that this method should be performed only by qualified application developers.

⇒ **NOTE:**
Using this method does not affect any future installation of CONVERSANT VIS Year 2000 Update, Patch 1.

Procedure

Use the following procedure to adjust the date. Immediately following this section is a sample of this procedure applied to a database called "orders".

1. Confirm that your application uses a database time field.

2. Determine the name of both the database table (*dbtablename*) and the time field within the table (*timefield*).

3. Log in to the CONVERSANT system as **root**

4. Back up the database table using the Script Builder application Backup option for Database tables. (From the cvis_menu, select Script Builder Applications, select the application name, select Backup, select Database).

   Repeat this step for all database tables that are affected by the problem. Label the backups to indicate they were made prior to this procedure.

5. At the UNIX prompt, enter **sqlplus sti/sti**

   The system displays the SQL> prompt.

6. At the SQL prompt, enter:

   update "*dbtablename*" set "*timefield*" = "*timefield*" + 36525;

   For *dbtablename*, type the name of the database table (such as "orders"), and for *timefield*, type the name of the time field in the database (such as "order_time").This command updates the time fields in the database table from Jan 01, 1901, to Jan 01, 2001, by adding to the field the number of days between these dates. (There are 36,525 days between 1/1/1901 and 1/1/2001.)

7. Repeat step 6 for all database tables affected by this problem. Make sure this procedure if performed after the last call that could insert records in the 20th century and before the first call that could access or insert records in the 21st century.

8. Perform a second Script Builder backup of all database tables altered by this procedure. Indicate on the backup that it was done *after* performing this procedure.

9. Also perform a backup using the mkimage command to ensure the current copy of the tables are saved. For details on the mkimage command, see *CONVERSANT VIS Version 4.0 Command Reference,* 585-350-209.

Sample

The following sample shows the above procedure applied to a table called *orders*.

1. At the UNIX prompt, enter **sqlplus sti/sti**

   The system responds with:

   ```
   SQL*Plus: Release 3.1.3.4.1 - Production on Wed Aug 18
   15:42:28 1999
   Copyright (c) Oracle Corporation 1979, 1994. All rights
   reserved.
   Connected to:
   Oracle7 Server Release 7.1.3.2.0 - Production Release
   PL/SQL Release 2.1.3.2.0 - Production
   ```

2. At the SQL> prompt, enter **select count(*) from "orders";**

   The system displays the count of rows in the table orders. Your table will likely have many more rows than this example.

   ```
     COUNT(*)
   ----------
         5
   ```

3. Enter the following command to see the date and time portion of the field *order_time* in the table *orders*:

   select to_char("order_time", 'MON-DD-YYYY HH24MISS') order_time from "orders";

   The system displays the date and times stored in the order_time field. Note that the date is always JAN-01-1901.

   ```
   ORDER_TIME
   -----------------------------------------------
   JAN-01-1901 030000
   JAN-01-1901 031200
   JAN-01-1901 161000
   JAN-01-1901 221200
   JAN-01-1901 121400
   ```

4. Enter the following command to update the date portion of the field to Jan 01, 2001:

   update "orders" set "order_time" = "order_time" + 36525;

   The system displays the number of rows that were updated. (This should equal the number of row in the table, as shown in step 2.)

   ```
   5 rows updated.
   ```

5. Enter the following command to confirm that the date portion has been updated to Jan-01-2000:

select to_char("order_time", 'MON-DD-YYYY HH24MISS') order_time from "orders";

The system displays the contents of the date and time portion of the order_time field. The dates should all say JAN-01-2001 and the times should not be changed from the display in step 3.

```
ORDER_TIME
------------------------------------------------

JAN-01-2001 030000
JAN-01-2001 031200
JAN-01-2001 161000
JAN-01-2001 221200
JAN-01-2001 121400
```

6. To save the changes, enter **commit;**

The system displays the following message: `Commit complete.`

7. To quit the system, enter **quit:**

The system displays the following message:

```
Disconnected from Oracle7 Server Release 7.1.3.2.0 –
Production Release

PL/SQL Release 2.1.3.2.0 - Production
```

We'd like your opinion.

Lucent welcomes your feedback on this document. Your comments can be of great value in helping us improve our documentation.

CONVERSANT® VIS Version 4.0 Year 2000 Compliance — For Systems Located Outside the United States and Canada
Document Number 585-310-599, Issue 2, August 1999, Comcode 108586850

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