Lucent Technologies
Bell Labs Innovations

CONVERSANT® VIS

Version 4.0
Year 2000 Compliance

585-310-598
Comcode 108215500
Issue 1.0
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- Answered by the called station
- Answered by the attendant
- Routed to a recorded announcement that can be administered by the CPE user

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Acknowledgment
This document was prepared by Product Documentation, Lucent Technologies, Columbus, OH.

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Year 2000 Compliance

Overview

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

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 — The Lucent Technologies statement of compliance and a description of the customer's responsibilities.
- 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.
- Guidelines for reviewing your applications — A checklist of suggested areas to investigate in your applications when reviewing them for year 2000 compliance.
- Additional actions required — Descriptions of all actions that you must perform after you have installed the updates.
- Notes on developing applications that are year 2000 compliant — Recommendations to follow to keep your applications year 2000 compliant.

- Areas that will behave differently — Descriptions of areas that will not be corrected by the update, 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.

Purpose

The purpose of this document is to guide the CONVERSANT VIS 4.0 customer through the steps necessary to update the system 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.

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:

- CONVERSANT VIS V4.0 Application Software Update 7.0 — Four diskettes with release notes. This update is the most recent update for V4.0 systems and must be installed, if you have not already done so, before loading the year 2000 updates.
- 486 BIOS Version 2.1g — One diskette. You do not need to install the 486 BIOS update if you have 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 in the U.S. or Canada.

What Is 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. For the CONVERSANT VIS V4 system, year 2000 compliance is achieved by installing the updates in the V4 Year 2000 Update Kit and revising your applications.

Lucent Technologies Statement of Compliance

When approaching and in the year 2000, the CONVERSANT VIS V4 system will substantially comply with its specifications or the documentation accompanying it that relates to the handling of calendar dates, as follows:

- The basic system and critical basic applications must continue to operate substantially the same in the year 2000 as in the year 1999.
- The underlying hardware platform and operating system must continue to operate substantially the same in the year 2000 as in the year 1999.
- System management must accept dates that reflect the year 2000 (for example, “2000” or “00”).
- All date-related features work in the year 2000.
- If applicable, the product should know that the year 2000 is a leap year.
- Date-dependent interactions with other products perform substantially the same.
- Reports should show “yr” or “20yr” and not “19yr”.

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.

Customer Responsibilities

The following list summarizes the steps that customers are responsible for taking to make their 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.
   - Review, modify if necessary, and test the appropriate 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.	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 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 may be mishandled if the application depends on the correct century.	If 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 require 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 require 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*xxx* 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 "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 when using U.S. English standard speech and Text to Speech for several date formats. 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 5 in "Formats for Speaking Dates" in the section "Developing Compliant Applications".

Continued on next page

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 Impact: 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 section "Lucent Technologies Statement of Compliance".
486 BIOS (25MHz and 50MHz) Version 2.1c	The CMOS BIOS locked up if entered after year 2000. Impact: 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:

- CONVERSANT VIS V4.0 Application Software Update 7.0 — Four diskettes with release notes. This update is the most recent update for V4.0 systems and must be installed before loading the year 2000 updates. If the CONVERSANT VIS V4.0 Application Software Update 7.0 was installed at an earlier date, you can ignore the Update 7.0 diskettes included in this kit.
- 486 BIOS Version 2.1g — One diskette. You do not need to install the 486 BIOS update if you have 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 in 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
Install the CONVERSANT V4 Application Software Update 7.0 (if not already installed at a previous date)	up to 30 minutes
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:

- Make a complete backup of your entire system before you begin the installation. You can use the **mkimage** command to make this backup. See the *CONVERSANT VIS Version 4.0 Maintenance,* 585-350-112, for instructions on backing up your system (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.

- 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.

- Make sure that your system has the CONVERSANT VIS V4.0 Applications Software Update 7. You can determine if it does by doing the following:

  1. Enter **displaypkg** at the UNIX prompt.
  2. In the list that is displayed, look for the following:

     `CONVERSANT VIS V4.0 Application Software Update 7`

     This line indicates the package has been installed. If you do not see this entry, then you will need to install the Update 7 using the diskettes and release notes in the V4 Year 2000 Update Kit.

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.

You do not need to install the 486 BIOS update if you have a 386 processor. The following procedure explains how to determine which processor you have:

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.

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.

Use the following procedure to install the update:

1. Login as root.
2. 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.
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 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. Login as root.
2. 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.
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 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 in 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`
     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. 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.

Guidelines for Reviewing Your Applications

Once you have installed the updates in the CONVERSANT VIS V4 Year 2000 Update Kit, you are ready to begin the work of reviewing your applications, making modifications, and testing your applications to make sure they operate correctly. The guidelines provided here for the review process are organized into the following sections:

1. Assess your resources
2. Familiarize yourself with the areas affected by year 2000
3. Determine which applications need to be reviewed
4. Review, modify, and test the appropriate applications

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 of Atypical Behavior" near the end of this document, which describes the areas of your system whose behavior will not be corrected by the update kit.

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.

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 may 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 "Potential for Error on December 31, 1999").
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 there is no doubt 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 “19xx” with something more appropriate. After making modifications, each application must be tested thoroughly to make sure it operates correctly.

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 programs (or DIPs) that accept or display date-related information, for example, a custom call data report which 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*xxx* format described in "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 5 in "Formats for Speaking Dates" for recommended formats.

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.
```

Restart for Remote Maintenance Board

You must restart the system on or after January 1, 2000, in order for the Remote Maintenance Board (RMB) to display the correct day and time in response to the RMB (**rmbcmd**) commands **date?** and **time?** The RMB is used by field-service personnel to obtain remote access to the system. Remote access is not affected if you do not restart the system, but the RMB commands will show the date as 12/31/99 with the time displayed in increments past 23:59.

Beginning January 1, 2000, the system will display a message each time you log in, reminding you to restart your system. Once you have restarted your system, the message will no longer be displayed.

Developing Compliant Applications

In general, when modifying existing applications and developing new ones, it is best to use four-digit years whenever possible. The following sections provide information to help you construct applications that are year 2000 compliant.

Potential for Error on December 31, 1999

Be aware that some of your applications could be affected during the last hours of Friday evening, December 31, 1999. Because of different time zones, the following two areas could result in inaccuracies during this time 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 cases, the CONVERSANT system converts the two-digit year to a four-digit year by adding the current century to the front of the two-digit value, either “19” or “20”. Because the CONVERSANT system uses Greenwich Mean Time (GMT) to determine the current century, inaccuracies can occur due to the time lag between midnight for GMT and midnight for the time zones for your applications. (GMT is a standard method of measuring time on a 24-hour clock and is several hours ahead of the continental U.S. time zones.)

On 12/31/1999, GMT will be the first time zone to reach midnight. When GMT enters the year 2000, the CONVERSANT system will 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 you are in Seattle, it will be 4:00 p.m. on 12/31/1999 when it is midnight for GMT. Therefore, during the last eight hours of 12/31/1999 in Seattle (from 4:00 p.m. to midnight), it is possible that you may have applications that will be inserting century digits of “20” while it is still 1999.

Table 3 shows the relation of GMT to the different U.S. time zones and the hours that are vulnerable for this kind of inaccuracy on 12/31/1999.

Table 3. GMT and Continental U.S. Time Zones

Time Zone	Cities	Time	Window for Error on December 31, 1999
GMT	Greenwich London Paris	Midnight	None
Eastern	New York City Washington D.C. Orlando	7:00 p.m.	5 hours (7:00 p.m. to 12:00 midnight)
Central	Chicago St. Louis New Orleans	6:00 p.m.	6 hours (6:00 p.m. to 12:00 midnight)
Mountain	Salt Lake City Denver Phoenix	5:00 p.m.	7 hours (5:00 p.m. to 12:00 midnight)
Pacific	Seattle Los Angeles San Diego	4:00 p.m.	8 hours (4:00 p.m to 12:00 midnight)

Script Builder Host Input *date* Fields

The CONVERSANT VIS V4.0 Year 2000 Update updates the formats for host date fields to accommodate dates in the 21st century. Table 4 shows the available formats. This update also provides a new host date field (YT*xxx*) for two-digit years that supports a range of 100 years.

The YTxxx format allows you to specify a threshold from 0 through 100 for use when dates span the rollover years from the 20th century through the 21st. 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. YT is a 2-digit year algorithm that translates the year to 20*yy* if *yy* is less than the specified threshold (*yy* is the input received from the host). If the year yy is equal to or greater than the specified threshold, the year is translated to 19*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. If the format is YT40 and an input year from the host is 27, the year is translated into 2037. If the input year from the host is 45, the

year is translated into 1945. For a 100-year span of 1900 through 1999, use the format YT0; for the years 2000 through 2099, use YT100.

See *CONVERSANT VIS Version 4.0 Script Builder*, 585-350-704, for detailed information on defining host input date fields.

Table 4. 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. “November 23, 2005,” “11/23/05” and “11-23-05” are all interpreted as the same date.
DM/D/Y	Date in month/day/year in current-century format, such as 11/23/98, 01/02/01, or 1/2/01 (default).
DM-D-Y	Date in month-date-year in current-century format, such as 11-23-98, 01-02-01, or 1-1-01 (default) with a hyphen (-) as a separator.
DM.D.Y	Date in month.date.year in current-century format, such as 11.23.98, 01.02.01, or 1.2.01 (default) with a period (.) as a separator.
DM/D/YY	Date in month/date/year format, such as 11/23/1998 or 01/02/2001, with a slash (/) as a separator.
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 a period (.) as the separator, such as 1998.11.23 or 2001.1.2
DM/D/YT<xxx>	Date in month/day/year format with a slash (/) as a separator. The YT<xxx> 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”.
DM-D-YT<xxx>	Date in month-day-year format with a hyphen (-) as a separator. The YT<xxx> 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”.
DM.D.YT<xxx>	Date in month.day.year format with a period (.) as a separator. The YT<xxx> 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”.

Formats for Speaking Dates

Table 5 describes how dates beyond 1999 are spoken when using U.S. English Standard speech and U.S. English Text to Speech (TTS).

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

Table 5. Speaking Dates Formats

Year	Date Format	Spoken Format	Example
2000	Y	zero-zero	2000 is spoken as "zero-zero"
2000	YY	two-thousand	2000 is spoken as "two thousand"
2001-2009	Y	zero-*x*	2004 is spoken as "zero-four"
2001-2009	YY	two-thousand-*x*	2008 is spoken as "two-thousand-eight"
>2009	Y	*x*	2010 is spoken as "ten"
>2009	YY	twenty-*x*	2010 is spoken as "twenty-ten"

Areas of Atypical Behavior

This sections describes the areas of your system that will not be corrected by this update kit. Some areas may require a small corrective action to perform as intended. Other areas are minor and should not impact customer applications. You should, however, become familiar with all of these areas so that you can address them if necessary.

CONVERSANT Areas

The following lists the areas of the CONVERSANT system whose behavior differs from the documented behavior for before the year 2000.

- 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”.
- The Call Classification Report does not handle incorrect input consistently. This report requires the user to provide a “start date” and an “end date.” If the end date is prior to the start date, the system may not produce an error, and no call records are displayed. If correct usage is followed (end date after the start date), the call data is shown as documented.

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

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

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

Table 6. 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 7 shows the results for the above sample code, before and after appending the modulous 100, for the date of February 9, 2036.

Table 7. 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. Login 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.