Lucent Technologies
Bell Labs Innovations



QIP Products and Year 2000 Readiness

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Note: This documentation is an early release of the final product documentation. It is meant to accompany software that is still in development. Some of the information in this documentation may be inaccurate or may not be an accurate representation of the functionality of the final delivered product. Lucent Technologies assumes no responsibility for any damages that might occur either directly or indirectly from these inaccuracies.

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1. Introduction

Lucent Technologies defines "Year 2000 Ready" as the ability of our software products to accurately process date data from, into, and beyond the years 1999 and 2001, including leap year calculations. This definition is based on use in accordance with the proper documentation, provided that all products (hardware, firmware, and software) used in combination with Lucent Technologies software, properly exchange date data with the Lucent Technologies software.

This paper is divided into sections based on the portion of the product(s), supported platforms, operating systems, and databases that require definition for compliancy. A statement is provided for each product/product set regarding the Level of Compliance based on the legend in Section 2.1.

2. Product Compliance

The current QIP product range is designed to be Year 2000 Compliant. The following is an outline of Year 2000 Readiness requirements for all QIP applications and future applications and products:

1. Correctly displays dates up to the year 2035. This includes debugging, logging, and diagnostic information that may be used by other programs.
2. Correctly treats the year 2000 as a leap year.
3. Correctly calculates the day of the week for all dates from 1980 to Jan 1, 2035.
4. The calendar arithmetic must correctly count time durations between any two dates from 1980 through 2034. This includes, but is not limited to, the following critical dates:

    - Friday, December 31, 1999
    - Saturday, January 1, 2000
    - Monday, February 28, 2000
    - Tuesday, February 29, 2000
    - Wednesday, March 1, 2000
    - Sunday, December 31, 2034
    - Monday, January 1, 2035

    In addition, the difference between 01/01/1980 and 01/01/2035 should calculate to 20,089 days.
5. Products must sort dates in proper chronological order for any collection of dates from 1980 through 2034.
6. Products must treat "dates and durations" intended to mean "no date" or "never" explicitly. Specific attention is directed to 9/9/99.

7. Wherever a time stamp is stored in binary, the time stamp must be tested for rollover to zero or rollover to negative to ensure proper handling. All time stamps used for dates must have sufficient capacity to function properly during the years 1980 through 2034 without ambiguity.
8. Any file format used as input to a subsequent process must be scrutinized and the subsequent process analyzed to ensure proper operation of the combined functionality from 1980 through 2034.
9. Any file format that is changed as a result of these requirements will be supported by documentation describing the migration from the old format to the new format. Programs that manipulate the new format must also tolerate the old format.
10. Any wire protocol that is changed as a result of these requirements will be supported by documentation describing the migration from the old wire protocol to the new wire protocol. Servers or clients that use the new protocol must be able to tolerate the old protocol as well. If two devices must exchange times or time stamps and only one of them is capable of the old format, the newer device must be capable of supplying the old format.

2. 1 Level of Compliancy

For each Lucent Technologies product or product bundle, the stated compliance is defined as follows:

Level of Compliance	***Description***
FULLY COMPLIANT	The current production version of the product is intended to fully comply with all ten of the factors described in Section 2.
PARTIALLY COMPLIANT	The current production version of the product does not fully comply with all 10 factors described in Section 2. However, Lucent Technologies intends to provide full compliance in future releases of the product.
NOT COMPLIANT	The current production version of the product does not comply with the factors described in Section 2 and Lucent Technologies does not intend to provide any further compliance in the future.

3. Individual Product Compliancy Information

The following functionality within QIP is effected by year 2000 date processing, and explicit tests have been performed against the application to address year 2000 readiness.

3.1 GUI - Object Profile

Description of Test	**Results**	**Level of Compliancy**
Verify that an object's purchase date can be entered correctly for Feb 29, 2000.	Passed - 5.0 B30	FULLY COMPLIANT

3.2 GUI - Reserved Addresses

Description of Test	**Results**	**Level of Compliancy**
Adding reserved addresses must display the correct server date and time on the Reserved Allocation: Add screen.	Passed - 5.0 B30	FULLY COMPLIANT
Adding reserved addresses must let you add a reserved address on Jan 1, 2000.	Passed - 5.0 B30	FULLY COMPLIANT
Adding reserved addresses must let you add a reserved address on Feb 28, 2000.	Passed - 5.0 B33	FULLY COMPLIANT
Adding reserved addresses must let you add a reserved address on Feb 29, 2000.	Passed - 5.0 B33	FULLY COMPLIANT
Adding reserved addresses must NOT let you add a reserved address on Feb 30, 2000.	Passed - 5.0 B33	FULLY COMPLIANT
Define a reserved object to expire on Dec 31,1999. Change the system clock to Dec 31, 1999 23:59. Wait 5 minutes and then check to make sure the object is no longer reserved.	Passed - 5.0 B35	FULLY COMPLIANT
Define a reserved object to expire on Jan 1, 2000. Change the system clock to Jan 1, 2000 23:59. Wait 5 minutes and then check to make sure the object is no longer reserved.	Passed - 5.0 B36	FULLY COMPLIANT
Define a reserved object to expire on Feb 28, 2000. Change the system clock to Feb 28, 2000 23:59. Wait 5 minutes and then check to make	Passed - 5.0 B35	FULLY COMPLIANT

Description of Test	Results	Level of Compliancy
sure the object is no longer reserved.		
Define a reserved object to expire on Feb 29, 2000. Change the system clock to Feb 29, 2000 23:59. Wait 5 minutes and then check to make sure the object is no longer reserved.	Passed - 5.0 B35	FULLY COMPLIANT
Define a reserved object to expire on Mar 1, 2000. Change the system clock to Mar 1, 2000 23:59. Wait 5 minutes and then check to make sure the object is no longer reserved.	Passed - 5.0 B35	FULLY COMPLIANT
Define a reserved object to expire on Dec 31, 2034. Change the system clock to Dec 31, 2034 23:59. Wait 5 minutes and then check to make sure the object is no longer reserved.	Passed - 5.0 B35	FULLY COMPLIANT
Define a reserved object to expire on Jan 1, 2035. Change the system clock to Jan 1, 2035 23:59. Wait 5 minutes and then check to make sure the object is no longer reserved.	Passed - 5.0 B35	FULLY COMPLIANT

3.3 GUI - Scheduled Move

Description of Test	Results	Level of Compliancy
Adding scheduled move must display the correct server date and time on the scheduled move: Add screen.	Passed - 5.0 B33	FULLY COMPLIANT
Set the system clock for Dec 31, 1999. Perform a scheduled move for an object on Jan 1, 2000. Change the system clock to 23:59:59, wait for 5 mins and make sure object has moved to the new location.	Passed - 5.0 B33	FULLY COMPLIANT
Set the system clock for Feb 28, 2000. Perform a scheduled move for an object on Feb 29, 2000. Change the system clock to 23:59:59, wait for 5 mins and make sure object has moved to the new location.	Passed - 5.0 B33	FULLY COMPLIANT
Set the system clock for Feb 29, 2000. Perform a scheduled move for an object on Mar 1, 2000. Change the system clock to 23:59:59, wait for 5	Passed - 5.0 B35	FULLY COMPLIANT

Description of Test	Results	Level of Compliancy
mins and make sure object has moved to the new location.		
Set the system clock for Dec 31, 2034. Perform a scheduled move for an object on Jan 1, 2035. Change the system clock to 23:59:59, wait for 5 mins and make sure object has moved to the new location.	Passed - 5.0 B35	FULLY COMPLIANT
Adding scheduled addresses must let you add a scheduled address on Dec 31, 1999.	Passed - 5.0 B35	FULLY COMPLIANT
Adding scheduled addresses must let you add a scheduled address on Jan 1, 2000.	Passed - 5.0 B35	FULLY COMPLIANT
Adding scheduled addresses must let you add a scheduled address on Feb 28, 2000.	Passed - 5.0 B35	FULLY COMPLIANT
Adding scheduled addresses must let you add a scheduled address on Feb 29, 2000.	Passed - 5.0 B35	FULLY COMPLIANT
Adding scheduled addresses must NOT let you add a scheduled address on Feb 30, 2000.	Passed - 5.0 B35	FULLY COMPLIANT
Adding scheduled addresses must let you add a scheduled address on Mar 1, 2000.	Passed - 5.0 B33	FULLY COMPLIANT
Adding scheduled addresses must let you add a scheduled address on Dec 31, 2034.	Passed - 5.0 B35	FULLY COMPLIANT
Adding scheduled addresses must let you add a scheduled address on Jan 1, 2035.	Passed - 5.0 B33	FULLY COMPLIANT

3.5 GUI - Active Lease Display

Description of Test	Results	Level of Compliancy
Set the system clock for Feb 28, 2000. Start the DHCP server and give out a new address to a client with a lease time of 1hr. Check the active lease display and make sure that the lease information displays correctly.	Passed - 5.0 B35	FULLY COMPLIANT
Set the system clock for Feb 29, 2000. Start the DHCP server and give out a new address to a client with a lease time of 1hr. Check the active lease display and make sure that the lease information displays correctly.	Passed - 5.0 B35	FULLY COMPLIANT
Set the system clock for Feb 28, 2000. Start the DHCP server and give out a new address to a	Passed - 5.0 B35	FULLY COMPLIANT

Description of Test	Results	Level of Compliancy
client with a lease time of 1hr. Reset the system clock of the DHCP server to Feb 29,2000. Check the active lease display and make sure that the lease information displays correctly. The lease should be expired.		
Set the system clock for Feb 29, 2000. Start the DHCP server and give out a new address to a client with a lease time of 1hr. Reset the system clock of the DHCP server to Feb 29,2000. Check the active lease display and make sure that the lease information displays correctly. The lease should be expired.	Passed - 5.0 B35	FULLY COMPLIANT
Set the system clock for Feb 29, 2000. Start the DHCP server and give out a new address to a client with a lease time of 24hr. Check the active lease display and make sure that the lease information displays correctly.	Passed - 5.0 B35	FULLY COMPLIANT

3.4 DNS SOA Record Calculation

Description of Test	Results	Level of Compliancy
Verify that the DNS SOA record is calculated correctly. The correct format is YYYYMMDDnn, where nn is an incremented number. Set the system clock for Dec 31,1999. Perform a NETWORK SERVICES->DNS, UPDATE, and verify the SOA Serial Number. It should be 1999123100.	Passed - 5.0 B35 Note: For BIND 4.9.x DNS Servers only. BIND 8.x servers only support sequential serial numbers.	FULLY COMPLIANT
Verify that the DNS SOA record is calculated correctly. The correct format is YYYYMMDDnn, where nn is an incremented number. Set the system clock for Feb 28, 2000. Perform a NETWORK SERVICES->DNS, UPDATE, and verify the SOA Serial Number. It should be 2000022800.	Passed - 5.0 B35 Note: For BIND 4.9.x DNS Servers only. BIND 8.x servers only support sequential serial numbers.	FULLY COMPLIANT
Verify that the DNS SOA record is calculated correctly. The correct format is YYYYMMDDnn,	Passed - 5.0 B35 Note: For BIND	FULLY COMPLIANT

Description of Test	Results	Level of Compliancy
where nn is an incremented number. Set the system clock for Feb 29, 2000. Perform a NETWORK SERVICES->DNS, UPDATE, and verify the SOA Serial Number. It should be 2000022901.	4.9.x DNS Servers only. BIND 8.x servers only support sequential serial numbers.	
Verify that the DNS SOA record is calculated correctly. The correct format is YYYYMMDDnn, where nn is an incremented number. Set the system clock for Mar 1, 2000. Perform a NETWORK SERVICES->DNS, UPDATE, and verify the SOA Serial Number. It should be 2000030101.	Passed - 5.0 B35 Note: For BIND 4.9.x DNS Servers only. BIND 8.x servers only support sequential serial numbers.	FULLY COMPLIANT

3.6 Command Line Interfaces

Description of Test	Results	Level of Compliancy
Verify that qip-move API and CLI accept yyyymmdd date stamps as input and processes according to the move section described above.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-active displays year 2000 dates correctly as per the active lease section described above.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-check works correctly since it performs date/time calculations.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-clear accepts mmddyyyy date/time format, and that processing is completed correctly.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-dhcpsync operates correctly across year 2000 date ranges since it passes lease information from the DHCP server.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-getobjectprof returns the object's purchase date correctly.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-setobject sets/inserts the an object's purchase date correctly.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-j2q converts lease information correctly including dates.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that qip-mcancel accepts mmddyyyy date formats and processing occurs correctly.	Passed - 5.0 B36	FULLY COMPLIANT

Description of Test	Results	Level of Compliancy
Verify that qip-report returns valid year 2000 dates in mm/dd/yyyy format.	Passed - 5.0 B35	FULLY COMPLIANT

3.7 Services Controller

Description of Test	Results	Level of Compliancy
Verify that dates from 1980 – 2034 can be displayed correctly within the event log of the services controller.	Passed - 5.0 B35	FULLY COMPLIANT

3.8 DHCP Server

Description of Test	Results	Level of Compliancy
Verify that dates from 1980 – 2034 can be handled correctly by the DHCP server. Active lease date/time information is stored in offset seconds from Jan 1, 1970.	Passed – DHCP version 5.0 B10 Lease information should be valid through the year 2105.	FULLY COMPLIANT
Debug and log files should display date/time stamps in mm/dd/yyyy format, and should display in the current time zone (opposed to GMT).	Passed - DHCP version 5.0 B13	FULLY COMPLIANT

3.9 License Key Support

Description of Test	Results	Level of Compliancy
Verify that license dates from 1980 – 2034 can be displayed correctly from within the about box.	Passed - 5.0 B35	FULLY COMPLIANT
Verify that dates from 1980 – 2034 can be handled correctly by the QIP License Key Program.	Passed - 5.0 B35	FULLY COMPLIANT

4. Supported Operating Systems Compliancy Information

The following is a list of supported platforms for Year 2000 compliancy as related to QIP. In QIP Version 3.0.2.7 and above, all date information is stored in the database as a four-digit year. In parts of the product, it is displayed or entered as a two-digit year, applying appropriate rules to delineate between the 20th and 21st centuries. In QIP Version 4.0 and above, all date information is stored in the database as a four-digit year. Throughout the system, dates are entered as four-digit years, however in parts of the product, some dates are displayed as two-digit years.
QIP Version 5.0 is fully Year 2000 compliant with all of the criteria that has been defined at the beginning of this document.

4.1 Hewlett Packard

4.1.1 Quadritek Supported Platforms:

QIP Version 5.0 currently supports HP-UX 10.10 and HP-UX 10.20. We have not yet certified HP-UX 10.30 or HP-UX 11.0. HP-UX 10.10 and HP-UX 10.20 are fully compliant year 2000 operating systems if the required patches are installed.

HP has developed updates to HP-UX 10.01, 10.10, and 10.20 to make these releases of HP's enterprise-class operating environment 2000-ready. These patches have been available since February 1997. These and subsequent versions of HP-UX will use the X/Open standards that pertain to the year 2000. HP-UX 10.20 will be supported by HP through mid-2001 to protect customers year 2000 project efforts. These year 2000 versions of HP-UX are available to customers with valid existing HP support contracts. They are available at no additional charge at the date of release.

HP-UX 11.0, and 10.30 currently support complete Y2K functionality with no required patches. HP is encouraging customers with HP-UX 9.x and earlier versions to upgrade to HP-UX 10.x. HP-UX 9.x is not year 2000 compliant.

4.2 Sun Microsystems

4.2.1 QIP Supported Platforms:

QIP Version 5.0 currently supports Sun Solaris 2.5.x and Solaris 2.6. Sun Solaris 2.5 and 2.5.1 are fully compliant year 2000 operating systems if the required patches are installed. Solaris 2.6 is Year 2000 compliant.

Sun Microsystems has developed updates to the Solaris 2.x operating system to make these releases of Sun's operating environment 2000-ready. These patches have been available since mid 1997. Year 2000 enhancements are available to support contract customers via an online download from the SunSolve or access1 databases. In addition,

the Solaris Year 2000 enhancements are available through the SunSpectrum Support program. If the customer doesn't have a support contract and wishes to obtain the Solaris 2.x enhancements then they must purchase a SunSolve support contract from SunService. Solaris 2.6 is year 2000 compliant and requires no patches.

4.3 Microsoft Windows 95/NT

From the outset, Microsoft has been preparing its products for dates well into the next century. All of Microsoft's operating systems (MS-DOS, Windows 3.x, Windows 95, and Windows NT) can handle files created up to the year 2108. The following chart illustrates the support for Year 2000 indicating the last year handled by the current version of specific Microsoft products.

Product Name	**Year Limit**
Windows 3.x file system (FAT16)	2108
Windows 95 file system (FAT16)	2108
Windows 95 file system (FAT32)	2108
Windows 95 runtime library (WIN32)	2099
Windows for Workgroups (FAT16)	2108
Windows NT file system (FAT16)	2108
Windows NT file system (NTFS)	future centuries
Windows NT runtime library (WIN32)	2099

4.4 IBM

4.4.1 QIP Supported Platforms:

QIP Version 5.0 currently supports AIX 4.1.x and 4.2.x. We have not yet certified AIX 4.3.x. AIX 4.1.x and 4.2.x are fully compliant year 2000 operating systems with the required patches. See below for details.

AIX

IBM is in the process of developing updates to the AIX 4.1.x, 4.2.x and 4.3.x operating systems to make these releases operating environment 2000-ready. All patches will be identified on April 30, 1998. Some patches are available today. Year 2000 enhancements are available to support contract customers via contacting IBM technical support. AIX 4.x operating systems with the applied patches have been ITAA certified.

AIX 4.3.0 and AIX 4.2.1:

Fixes were required and have been identified since April 30, 1998.

AIX 4.2.0:

Available Fixes:

- IX62015 CHUSER ACCOUNT EXPIRATION NOT COMPATIBLE WITH YEAR 2000
- Additional fixes will be required and they will be identified by April 30, 1998.

AIX 4.1 through AIX 4.1.5:

Available Fixes:

- IX60645 YEAR 2000 AND THE EXPIRES ATTRIBUTE

- IX69580 YEAR 2000 LEAP YEAR IGNORED
- Additional fixes will be required and they will be identified by April 30, 1998.

5. Operating System Compliancy Information

Compliance Status Key:

1. Year 2000 Compliant
2. Requires Year 2000 Enhancements for Compliance

Operating System	OS Version	QIP 5.0 Certified	y2000 Compliance Status	y2000 Compliance Date
HP-UX	11	No	1	
HP-UX	10.30	No	1	
HP-UX	10.20	Yes	2	Available from HP
HP-UX	10.10	Yes	2	Available from HP
HP-UX	10.01	No	2	Available from HP
Solaris SPARC/X86	2.6	Yes	1	
Solaris SPARC/X86	2.5.1	Yes	2	Available from Sun
Solaris SPARC/X86	2.5	Yes	2	Available from Sun
IBM AIX	4.3.x	No	2	April 30, 1998
IBM AIX	4.2.x	Yes	2	April 30, 1998
IMB AIX	4.1.x	Yes	2	April 30, 1998
Windows NT	4.0	Yes	1	

6. Supported Database Systems Compliancy Information

The following is a list of supported database platforms for Year 2000 compliancy as related to QIP. This list covers the relational database, and all support components for Sybase and Oracle.

6.1 Sybase Server/Database and Associated Products

Product or Component Name	Current product version	Certified version and date of release (all later releases are certified)	Legal Century Range product operates within	Implied century rule	Compliance issue description or comment relating to current product version
Adaptive Server Enterprise	11.5	11.5, 10/1/97	1753-9999	<50 = 2000, >49 = 1900	FULLY COMPLIANT
Backup Server	11.5	11.5, 10/1/97 11.0.3.2, 12/31/97	1753-9999	<85 = 2000, >84 = 1900	FULLY COMPLIANT
Open Client (ctlib and dblib)	11.1.1, 10.0.4	11.1.1,12/31/97	1753-9999	<50 = 2000, >49 = 1900	FULLY COMPLIANT

Product or Component Name	Current product version	Certified version and date of release (all later releases are certified)	Legal Century Range product operates within	Implied century rule	Compliance issue description or comment relating to current product version
		10.0.4, 12/31/97			
Replication Server	11.0.3	11.0.3 EBF, 12/31/97	1753-9999	<50 = 2000, >49 = 1900	FULLY COMPLIANT
Replication Server Manager	11.0	11.5, 5/31/98 in SQL Central	1753-9999	n/a	11.0 displays RS errorlog entries in 2-digit years
SQL Server (also see Adaptive Server Enterprise)	11.0.3.2	11.0.3.2, 12/31/97	1753-9999	<50 = 2000, >49 = 1900	FULLY COMPLIANT
SQL Server Manager	10.0.x	Not planned	1753-9999	<50 = 2000, >49 = 1900	Product to be replaced by Sybase Central 11.5

6.2 Oracle Server/Database and Associated Products

The following section outlines the Oracle database server and associated application components. For detailed information refer to:

http://www.oracle.com/support/html/2000/2000.htm

Product or Bundle	Product Components	Compliant Version/ Release	Compliance
Oracle8 Server Workgroup Edition	N/A	8.X and >	FULLY COMPLIANT
Oracle8 Server Enterprise Edition	N/A	8.X and >	FULLY COMPLIANT
Oracle8 Cartridges	Context Cartridge Video Cartridge Spatial Cartridge Image Cartridge Replication Services InterOffice Gateways Web Application Server InterOffice Messaging Cartridge Interoffice Document Cartridge Time Series Cartridge Visual Information Retrieval Cartridge Workflow Cartridge	 4.1 and > 4.1 and >	FULLY COMPLIANT
Oracle8 Options	Objects Option Partitioning Option Parallel Server Option	8.X and > 8.X and > 8.X and >	FULLY COMPLIANT
Oracle7 Server Enterprise Edition	N/A	7.X and >	FULLY COMPLIANT

Product or Bundle	Product Components	Compliant Version/ Release	Compliance
Oracle7 Server Workgroup Edition	N/A	7.X and >	FULLY COMPLIANT
Personal Oracle7	N/A	7.X and >	FULLY COMPLIANT
Oracle Server Manager	N/A	7.X and >	FULLY COMPLIANT
Oracle Network Manager	N/A		FULLY COMPLIANT
Oracle SQL*Net	N/A	ALL	FULLY COMPLIANT
Distributed Database Option	N/A	7.X and >	FULLY COMPLIANT
Parallel Query Option	N/A	7.X and >	FULLY COMPLIANT
Oracle Multi-Protocol Interchange	N/A	ALL	FULLY COMPLIANT
Oracle ODBC drivers	N/A	ALL	FULLY COMPLIANT
Trusted Oracle7 Server	N/A	7.X and >	FULLY COMPLIANT
SQL*Module	N/A		FULLY COMPLIANT
PL/SQL	N/A	2.X and >	FULLY COMPLIANT
SQL*Plus	N/A	ALL	FULLY COMPLIANT
Oracle7 Server Options	Parallel Server Option Spatial Data Option Video Option Document Option ConText Option Messaging Option	7.X and > 7.X and > 7.X and > 7.X and > 7.X and > 7.X and >	FULLY COMPLIANT
Oracle SQL*Net Protocol Adapters	TCP/IP (plus PPP/SLIP) DECnet LU6.2 (APPC, CPIC) Named Pipes NetBIOS SPX/IPX (Novell) NDS	ALL ALL ALL ALL ALL ALL ALL	FULLY COMPLIANT
Oracle Advanced Networking Option	SQL*Net DCE Secure Network Services Native Naming Adapters	ALL ALL ALL	FULLY COMPLIANT
Enterprise Backup Utility	N/A	2.X and >	FULLY COMPLIANT

7. Relational Database Compliancy Information

Year 2000 Compliance Status Codes

1. Year 2000 Compliant
2. Requires Year 2000 Enhancements for Compliance
3. Not Year 2000 Compliant

Relational Database	QIP 5.0 Certified	y2000 Compliance Status	y2000 Compliance Date
Sybase 11.0.1	Yes	3	None
Sybase 11.0.2	Yes	3	None
Sybase 11.0.3	Yes	1	Available from Sybase
Sybase 11.5	Yes (4.0B21)	1	Available from Sybase
Sybase Open Client 11.1.0	Yes	3	None
Sybase Open Client 10.0.3	Yes	3	None
Sybase Open Client 10.0.4	Yes	1	None
Sybase Open Client 11.1.1	Yes	1	Available from Sybase
Oracle 7.3.3	Yes	1	Available from Oracle
Oracle 8.x	No	1	Available from Oracle
Oracle SQL*Net 7.3.2	Yes	1	Available from Oracle
Oracle SQL*Net 8.x	No	1	Available from Oracle