OpenEdge® Release 10.2B06 introduces several new tuning parameters for OpenEdge databases with an Enterprise license. These parameters are intended to improve performance of prefetch queries in large scale deployments, as discussed in the following sections:

- Prefetch tuning
- Message wait
- Parameter Reference
- Virtual System Table support
- PROMON support
- Third party acknowledgements

The information in this Web paper supplements the contents of the OpenEdge Release 10.2B version of OpenEdge Data Management: Database Administration and the OpenEdge Release 10.2B06 release notes.

See the 10.2B OpenEdge Product Documentation on Progress Communities at http://communities.progress.com/pcom/docs/DOC-103525.
Prefetch tuning

Tuning the behavior of prefetch queries can mitigate two possible performance issues: high System CPU utilization and inefficient network utilization.

The poll() mechanism employed in the OpenEdge client/server environment is known to have a high System CPU cost associated with it. In large-scale deployments, the cost of the poll() mechanism can overwhelm a system, preventing proper scaling. By managing the frequency of poll() calls, you can reduce System CPU utilization and increase user CPU utilization.

Additionally, using large network message buffers to make most efficient use of network bandwidth is often subverted when the remote client digests the received data faster than the server can populate a network message to its capacity. By managing the contents and behavior of network messages, you can more effectively manage your network bandwidth.

In Release 10.2B06, OpenEdge provides the ability to manage the contents and behavior of network messages and the frequency of calls to the poll() mechanism to mitigate these issues. Using new tuning parameters, you can fine tune the behavior of message packing for prefetch queries as well as how often the poll() system call is invoked.

Enabling prefetch delay

Prior to Release 10.2B06, a network message containing the first record associated with a prefetch query was immediately sent to the remote client requesting it. Subsequent messages included the remaining records. Enabling a delay through the startup parameter -prefetchDelay, allows the OpenEdge server to fill the network message containing the first record with additional records before sending it to the remote client. Two additional startup parameters, -prefetchNumRecs and -prefetchFactor, determine the duration of the delay.

If you specify -prefetchDelay, the behavior of the first network message is altered. The default behavior when -prefetchDelay, is not specified, is to continue sending the first record in its own message, regardless of the -prefetchNumRecs and -prefetchFactor parameter values.

Calculating prefetch buffer utilization

You can alter network message utilization for a prefetch query with the startup parameters -prefetchNumRecs and -prefetchFactor. NumRecs takes an integer value that represents the number of records to put in the network message. Factor takes an integer value that represents a “percent full” calculation for the network message. The network message is sent when the minimum of either parameter is reached. The interaction of the two parameters is governed as follows:

- Set NumRecs extremely high to guarantee that the Factor percentage is the minimum.
- Set Factor to zero (0) to guarantee that the number of records specified by NumRecs is the minimum.

By default, the size of the prefetch data in a network message is controlled by the number of records (16), which is the pre-10.2B06 behavior.
Prefetch priority

In deployments with exceptionally heavy utilization of the poll() mechanism, you can add the ability to skip calls to poll() with the startup parameter -pollskip. This parameter takes an integer value that represents the number of records to add to the network message of an in-process prefetch query without additional polling. The poll skip is off by default, and only engaged when the previous poll() call returns with nothing waiting.

In some circumstances, the poll() call actually takes longer than the addition of a record to the message in the ready queue. Adding more than one record to the message at a time can greatly reduce the number of poll() calls being made on large deployments. The expected outcome is that skipping calls to poll() greatly improves overall system performance due to a decrease in “System CPU” cycles, allowing for increased “User CPU” cycles.

Message wait

In a deployment where there is heavy network traffic, you can add a message wait to the server such that the server waits the specified number of seconds to have communication with a remote client before looking for other events, such as a database shut down or force disconnect of a remote client. Setting this value can reduce system calls when a server is idle. The default is 2 (the same as the previous behavior).

Parameter Reference

The following new startup parameters are available for use on databases with an Enterprise license:

- Prefetch delay (-prefetchDelay)
- Prefetch Num Recs (-prefetchNumRecs)
- Prefetch Factor (-prefetchFactor)
- Prefetch Priority (-prefetchPriority)
- Message Wait (-Nmsgwait)
Prefetch delay (-prefetchDelay)

Use Prefetch delay (-prefetchDelay) to enable a delay when sending the first network message for queries with prefetch capabilities. Prefetch delay is off by default, indicating that the first network message is sent as soon as it contains the first record of the query.

When you specify Prefetch delay, the Prefetch Num Recs (-prefetchNumRecs) and Prefetch Factor (-prefetchFactor) parameters determine the duration of the delay.

### Prefetch Num Recs (-prefetchNumRecs)

<table>
<thead>
<tr>
<th>Operating system and syntax</th>
<th>UNIX Windows</th>
<th>-prefetchNumRecs n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use with</td>
<td>Maximum value</td>
<td>Minimum value</td>
</tr>
<tr>
<td>DBS</td>
<td>32766</td>
<td>1</td>
</tr>
</tbody>
</table>

1. Prior to 10.2B06, 16 was the static setting.

Use Prefetch Num Recs (-prefetchNumRecs) to increase the number of records placed in a network message before it is sent to a remote client.

Setting Prefetch Num Recs (-prefetchNumRecs) may cause a waiting remote client to wait longer for full network messages containing prefetched records, but overall system performance is expected to improve by saving on network traffic. Another possible side-effect is that an individual remote client see might see “choppy” responses from the server.

The number of records in a network buffer is also influenced by the -prefetchFactor parameter. See the “Calculating prefetch buffer utilization” section on page 3 for a discussion of the interaction between the parameters.
Prefetch Factor (-prefetchFactor)

<table>
<thead>
<tr>
<th>Operating system and syntax</th>
<th>UNIX Windows</th>
<th>-prefetchFactor ( n )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use with</td>
<td>Maximum value</td>
<td>Minimum value</td>
</tr>
<tr>
<td>DBS</td>
<td>100</td>
<td>0</td>
</tr>
</tbody>
</table>

1. The default of 0 gives pre-10.2B06 behavior

Use Prefetch Factor (-prefetchFactor) to establish a percentage of a network message required to contain prefetched data before sending the message to a waiting remote client.

The number of records in a network buffer is also influenced by the -prefetchNumRecs parameter. See the “Calculating prefetch buffer utilization” section on page 3 for a discussion of the interaction between the parameters.

Prefetch Priority (-prefetchPriority)

<table>
<thead>
<tr>
<th>Operating system and syntax</th>
<th>UNIX Windows</th>
<th>-prefetchPriority ( n )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use with</td>
<td>Maximum value</td>
<td>Minimum value</td>
</tr>
<tr>
<td>DBS</td>
<td>32766</td>
<td>0</td>
</tr>
</tbody>
</table>

1. The default of 0 gives pre-10.2B06 behavior.

Use Prefetch Priority (-prefetchPriority) to utilize a “pollskip” that adds \( n \) records to the network message of an in-process prefetch query without additional polling. The pollskip only occurs if the previous poll() call returned nothing waiting.

Adding more than one record to the message at a time can greatly reduce the number of poll() calls being made on a large database configuration. The expected result is that reducing poll() calls improves overall system performance by decreasing the “System CPU” cycles allow for increased “User CPU” cycles.
Message Wait (-Nmsgwait)

<table>
<thead>
<tr>
<th>Operating system and syntax</th>
<th>UNIX</th>
<th>Windows</th>
<th>-Nmsgwait n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use with</td>
<td>Maximum value</td>
<td>Minimum value</td>
<td>Single-user default</td>
</tr>
<tr>
<td>DBS</td>
<td>255</td>
<td>1</td>
<td>–</td>
</tr>
</tbody>
</table>

1. The default of 2 gives pre-10.2B06 behavior.

Use Message Wait (-Nmsgwait) to indicate the number of seconds a server waits for a remote network message before checking for other events such as a database shutdown or forced disconnect of a remote client.

Virtual System Table support

The following fields are added to the _Startup Virtual System Table (VST) to allow you to view and change the tuning parameters:

- _Startup-Prefetch-Delay
- _Startup-Prefetch-Num_Recs
- _Startup-Prefetch-Factor
- _Startup-Prefetch-Priority
- _Startup-NmsgWait

PROMON support

Updates to PROMON allow for viewing and altering the tuning parameters, as shown in the following sections:

- Display startup parameters
- Alter startup parameters
Display startup parameters

Display startup parameters from the following menus:

- **Shared Resources**

  Choose option 6 from the main PROMON menu. The following is an excerpt from the information displayed:

  ```
  Server message wait time (-Nmsgwait): 5
  Delay first prefetch message (-prefetchDelay): Enabled
  Prefetch message fill percentage (-prefetchFactor): 25
  Minimum records in prefetch msg (-prefetchNumRecs): 50
  Suspension queue poll priority (-prefetchPriority): 10
  ```

- **Startup Parameters**

  Choose **R&D> 1(Status Displays)> 12 (Startup Parameters)**. The following is an excerpt from the information displayed:

  ```
  LRU2 force skips: 0
  Server network message wait time: 5
  Delay first prefetch message: 4303104
  Prefetch message fill percentage: 25
  Minimum records in prefetch msg: 50
  Suspension queue poll priority: 10
  ```

Alter startup parameters

Alter the values of the tuning parameters on a running database by choosing **R&D> 4 (Administrative Functions)> 7 (Server Options)**. The following menu is displayed:

<table>
<thead>
<tr>
<th>03/22/12 03/22/12</th>
<th>OpenEdge Release 10 Monitor (R&amp;D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:59:52</td>
<td>Server Options</td>
</tr>
</tbody>
</table>

1. Server network message wait time: 5 seconds
2. Delay first prefetch message: Enabled
3. Prefetch message fill percentage: 25%
4. Minimum records in prefetch message: 50
5. Suspension queue poll priority: 10
6. Terminate a server

Enter a number, P, T, or X (? for help):

Choose the option that modifies the parameter you want to alter.
Third party acknowledgements

OpenEdge includes AdventNet - Agent Toolkit licensed from AdventNet, Inc. [http://www.adventnet.com](http://www.adventnet.com). All rights to such copyright material rest with AdventNet.

OpenEdge includes ANTLR (Another Tool for Language Recognition) software Copyright © 2003-2006, Terence Parr. All rights reserved. Neither the name of the author nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. Software distributed on an “AS IS” basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License agreement that accompanies the product.

OpenEdge includes software developed by the Apache Software Foundation [http://www.apache.org/](http://www.apache.org/). Copyright © 1999 The Apache Software Foundation. All rights reserved (Xerces C++ Parser (XML) and Xerces2 Java Parser (XML)); Copyright © 1999-2002 The Apache Software Foundation. All rights reserved (Xerces Parser (XML)); and Copyright © 2000-2003 The Apache Software Foundation. All rights reserved (Ant). The names “Apache,” “Xerces,” “ANT,” and “Apache Software Foundation” must not be used to endorse or promote products derived from this software without prior written permission. Products derived from this software may not be called “Apache”, nor may “Apache” appear in their name, without prior written permission of the Apache Software Foundation. For written permission, please contact apache@apache.org. Software distributed on an “AS IS” basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License agreement that accompanies the product.

OpenEdge includes Concurrent Java software Copyright 1994-2000 Sun Microsystems, Inc. All Rights Reserved. -Neither the name of or trademarks of Sun may be used to endorse or promote products including or derived from the Java Software technology without specific prior written permission; and Redistributions of source or binary code must contain the above copyright notice, this notice and the following disclaimers: This software is provided "AS IS," without a warranty of any kind. ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE HEREBY EXCLUDED. SUN MICROSYSTEMS, INC. AND ITS LICENSORS SHALL NOT BE LIABLE FOR ANY DAMAGES SUFFERED BY LICENSEE AS A RESULT OF USING, MODIFYING OR DISTRIBUTING THE SOFTWARE OR ITS DERIVATIVES. IN NO EVENT WILL SUN MICROSYSTEMS, INC. OR ITS LICENSORS BE LIABLE FOR ANY LOST REVENUE, PROFIT OR DATA, OR FOR DIRECT, INDIRECT, SPECIAL, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWEVER CAUSED AND REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF THE USE OF OR INABILITY TO USE SOFTWARE, EVEN IF SUN MICROSYSTEMS, INC. HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

OpenEdge includes DataDirect software Copyright © 1991-2007 Progress Software Corporation and/or its subsidiaries or affiliates. All Rights Reserved. (DataDirect Connect for JDBC Type 4 driver); Copyright © 1993-2009 Progress Software Corporation and/or its subsidiaries or affiliates. All Rights Reserved. (DataDirect Connect for JDBC); Copyright © 1988-2007 Progress Software Corporation and/or its subsidiaries or affiliates. All Rights Reserved. (DataDirect Connect for ODBC); and Copyright © 1988-2007 Progress Software
OpenEdge includes DataDirect Connect for ODBC and DataDirect Connect64 for ODBC software, which include ICU software 1.8 and later - Copyright © 1995-2003 International Business Machines Corporation and others All rights reserved. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

OpenEdge includes DataDirect Connect for ODBC and DataDirect Connect64 for ODBC software, which include software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/). Copyright © 1998-2006 The OpenSSL Project. All rights reserved. And Copyright © 1995-1998 Eric Young (eay@cryptsoft.com). All rights reserved.

OpenEdge includes DataDirect products for the Microsoft SQL Server database which contain a licensed implementation of the Microsoft TDS Protocol.

OpenEdge includes software authored by David M. Gay. Copyright © 1998-2001 by Lucent Technologies (dtoa.c); Copyright © 1998, 2000 by Lucent Technologies All Rights Reserved (decstrtod.c; strtodg.c); Copyright © 1998, 2000 by Lucent Technologies All Rights Reserved (decstrtof.c; strtord.c); Copyright © 1998 by Lucent Technologies All Rights Reserved (dmisc.c; gdtoa.h; gethex.c; gmisc.c; sum.c); Copyright © 1998, 1999 by Lucent Technologies All Rights Reserved (gdtoa.c; misc.c; smisc.c; ulp.c); Copyright © 1998-2000 by Lucent Technologies All Rights Reserved (gdtoaimp.h); Copyright © 2000 by Lucent Technologies All Rights Reserved (hd_init.c). Full copies of these licenses can be found in the installation directory, in the c:/OpenEdge/licenses folder. Permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice and this permission notice and warranty disclaimer appear in supporting documentation, and that the name of Lucent or any of its entities not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. LUCENT DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS. IN NO EVENT SHALL LUCENT OR ANY OF ITS ENTITIES BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
OpenEdge includes http package software developed by the World Wide Web Consortium. Copyright © 1994-2002 World Wide Web Consortium, (Massachusetts Institute of Technology, European Research Consortium for Informatics and Mathematics, Keio University). All rights reserved. This work is distributed under the W3C® Software License [http://www.w3.org/Consortium/Legal/2002/copyright-software-20021231] in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

OpenEdge includes ICU software 1.8 and later - Copyright © 1995-2003 International Business Machines Corporation and others All rights reserved. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.


OpenEdge includes Infragistics NetAdvantage for .NET v2009 Vol 2 Copyright © 1996-2009 Infragistics, Inc. All rights reserved.

OpenEdge includes JSTL software Copyright 1994-2006 Sun Microsystems, Inc. All Rights Reserved. Software distributed on an “AS IS” basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License agreement that accompanies the product.

OpenEdge includes OpenSSL software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/). Copyright © 1998-2007 The OpenSSL Project. All rights reserved. This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com). Copyright © 1995-1998 Eric Young (eay@cryptsoft.com) All rights reserved. The names "OpenSSL Toolkit" and "OpenSSL Project" must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org. Products derived from this software may not be called "OpenSSL" nor may "OpenSSL" appear in their names without prior written permission of the OpenSSL Project. Software distributed on an "AS IS" basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License agreement that accompanies the product.

OpenEdge includes Quartz Enterprise Job Scheduler software Copyright © 2001-2003 James House. All rights reserved. Software distributed on an “AS IS” basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License agreement that accompanies the product. This product uses and includes within its distribution, software developed by the Apache Software Foundation (http://www.apache.org/).

OpenEdge includes code licensed from RSA Security, Inc. Some portions licensed from IBM are available at http://oss.software.ibm.com/icu4j/.

OpenEdge includes the RSA Data Security, Inc. MD5 Message-Digest Algorithm. Copyright ©1991-2, RSA Data Security, Inc. Created 1991. All rights reserved.
OpenEdge includes Sonic software, which includes software developed by Apache Software Foundation (http://www.apache.org/). Copyright © 1999-2000 The Apache Software Foundation. All rights reserved. The names “Ant”, “Axis”, “Xalan,” “FOP,” “The Jakarta Project”, “Tomcat”, “Xerces” and/or “Apache Software Foundation” must not be used to endorse or promote products derived from the Product without prior written permission. Any product derived from the Product may not be called “Apache”, nor may “Apache” appear in their name, without prior written permission. For written permission, please contact apache@apache.org.

OpenEdge includes Sonic software, which includes software Copyright © 1999 CERN - European Organization for Nuclear Research. Permission to use, copy, modify, distribute and sell this software and its documentation for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation. CERN makes no representations about the suitability of this software for any purpose. It is provided "as is" without expressed or implied warranty.

OpenEdge includes Sonic software, which includes software developed by ExoLab Project (http://www.exolab.org/). Copyright © 2000 Intalio Inc. All rights reserved. The names “Castor” and/or “ExoLab” must not be used to endorse or promote products derived from the Products without prior written permission. For written permission, please contact info@exolab.org. Exolab, Castor and Intalio are trademarks of Intalio Inc.

OpenEdge includes Sonic software, which includes software developed by IBM. Copyright © 1995-2003 International Business Machines Corporation and others. All rights reserved. Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation. Software distributed on an "AS IS" basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License agreement that accompanies the product. Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

OpenEdge includes Sonic software, which includes the JMX Technology from Sun Microsystems, Inc. Use and Distribution is subject to the Sun Community Source License available at http://sun.com/software/communitysource.

OpenEdge includes Sonic software, which includes software developed by the ModelObjects Group (http://www.modelobjects.com). Copyright © 2000-2001 ModelObjects Group. All rights reserved. The name “ModelObjects” must not be used to endorse or promote products derived from this software without prior written permission. Products derived from this software may not be called “ModelObjects”, nor may “ModelObjects” appear in their name, without prior written permission. For written permission, please contact djacobs@modelobjects.com.

OpenEdge includes Sonic software, which includes code licensed from Mort Bay Consulting Pty. Ltd. The Jetty Package is Copyright © 1998 Mort Bay Consulting Pty. Ltd. (Australia) and others.
OpenEdge includes Sonic software, which includes files that are subject to the Netscape Public License Version 1.1 (the “License”); you may not use this file except in compliance with the License. You may obtain a copy of the License at http://www.mozilla.org/NPL/. Software distributed under the License is distributed on an “AS IS” basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License. The Original Code is Mozilla Communicator client code, released March 31, 1998. The Initial Developer of the Original Code is Netscape Communications Corporation. Portions created by Netscape are Copyright 1998-1999 Netscape Communications Corporation. All Rights Reserved.

OpenEdge includes Sonic software, which includes software developed by the University Corporation for Advanced Internet Development http://www.ucaid.edu Internet2 Project. Copyright © 2002 University Corporation for Advanced Internet Development, Inc. All rights reserved. Neither the name of OpenSAML nor the names of its contributors, nor Internet2, nor the University Corporation for Advanced Internet Development, Inc., nor UCAID may be used to endorse or promote products derived from this software and products derived from this software may not be called OpenSAML, Internet2, UCAID, or the University Corporation for Advanced Internet Development, nor may OpenSAML appear in their name without prior written permission of the University Corporation for Advanced Internet Development. For written permission, please contact opensaml@opensaml.org.

OpenEdge includes the UnixWare platform of Perl Runtime authored by Kiem-Phong Vo and David Korn. Copyright © 1991, 1996 by AT&T Labs. Permission to use, copy, modify, and distribute this software for any purpose without fee is hereby granted, provided that this entire notice is included in all copies of any software which is or includes a copy or modification of this software and in all copies of the supporting documentation for such software. THIS SOFTWARE IS BEING PROVIDED “AS IS”, WITHOUT ANY EXPRESS OR IMPLIED WARRANTY. IN PARTICULAR, NEITHER THE AUTHORS NOR AT&T LABS MAKE ANY REPRESENTATION OR WARRANTY OF ANY KIND CONCERNING THE MERCHANTABILITY OF THIS SOFTWARE OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.

OpenEdge includes Vermont Views Terminal Handling Package software developed by Vermont Creative Software. Copyright © 1988-1991 by Vermont Creative Software.

OpenEdge includes XML Tools, which includes versions 8.9 of the Saxon XSLT and XQuery Processor from Saxonica Limited (http://www.saxonica.com/) which are available from SourceForge (http://sourceforge.net/projects/saxon/). The Original Code of Saxon comprises all those components which are not explicitly attributed to other parties. The Initial Developer of the Original Code is Michael Kay. Until February 2001 Michael Kay was an employee of International Computers Limited (now part of Fujitsu Limited), and original code developed during that time was released under this license by permission from International Computers Limited. From February 2001 until February 2004 Michael Kay was an employee of Software AG, and code developed during that time was released under this license by permission from Software AG, acting as a "Contributor". Subsequent code has been developed by Saxonica Limited, of which Michael Kay is a Director, again acting as a "Contributor". A small number of modules, or enhancements to modules, have been developed by other individuals (either written especially for Saxon, or incorporated into Saxon having initially been released as part of another open source product). Such contributions are acknowledged individually in comments attached to the relevant code modules. All Rights Reserved. The contents of the Saxon files are subject to the Mozilla Public License Version 1.0 (the "License"); you may not use these files except in compliance with the License. You may obtain a copy of the License at http://www.mozilla.org/MPL/ and a copy of the license can also be found in the
installation directory, in the c:/OpenEdge/licenses folder. Software distributed under the License is distributed on an "AS IS" basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License.

OpenEdge includes XML Tools, which includes Xs3P v1.1.3. The contents of this file are subject to the DSTC Public License (DPL) Version 1.1 (the "License"); you may not use this file except in compliance with the License. A copy of the license can be found in the installation directory, in the c:/OpenEdge/licenses folder. Software distributed under the License is distributed on an "AS IS" basis, WITHOUT WARRANTY OF ANY KIND, either express or implied. See the License for the specific language governing rights and limitations under the License. The Original Code is xs3p. The Initial Developer of the Original Code is DSTC. Portions created by DSTC are Copyright © 2001, 2002 DSTC Pty Ltd. All rights reserved.

OpenEdge includes YAJL software Copyright 2007, Lloyd Hilaiel. Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met: 1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer. 2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution. 3. Neither the name of Lloyd Hilaiel nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission. THIS SOFTWARE IS PROVIDED BY THE AUTHOR "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.