Red Hat Developer Toolset 3.x
3.1 Release Notes

Release Notes for Red Hat Developer Toolset 3.1

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Abstract

Red Hat Developer Toolset is a Software Collection from the Red Hat Software Collections offering. It is designed for developers working on the Red Hat Enterprise Linux platform. Using a framework called Software Collections, an additional set of tools is installed into the /opt/ directory, as recommended by the UNIX Filesystem Hierarchy Standard. These tools are enabled by the user on demand using the supplied scl utility. Red Hat Developer Toolset 3.1 provides current versions of the GNU Compiler Collection, GNU Debugger, Eclipse development platform, and other development, debugging, and performance monitoring tools. These do not replace the Red Hat Enterprise Linux system versions of these tools, nor will they be used in preference to those system versions unless explicitly invoked using the scl utility. These Release Notes contain important information available at the time of release of Red Hat Developer Toolset 3.1. Known problems, resources, and other issues are discussed here. Read this document before beginning to use Red Hat Developer Toolset 3.1. For information on other components of Red Hat Software Collections, see the Red Hat Software Collections Release Notes. For details about length of support for individual components, refer to the Red Hat Software Collections Product Life Cycle document.

Chapter 1. System Requirements

This chapter specifies hardware requirements and contains information related to the installation of Red Hat Developer Toolset 3.1.

1.1. Installation Prerequisites

Red Hat Developer Toolset 3.1 contains packages for both Red Hat Enterprise Linux 6 and Red Hat Enterprise Linux 7 running on AMD64 and Intel 64 architectures. Generation and manipulation of 32-bit binaries is also supported.

The correct packages must be installed according to the host operating system in use. Red Hat Enterprise Linux 6 RPM packages can be used on supported versions of Red Hat Enterprise Linux 6 only, and Red Hat Enterprise Linux 7 RPM packages can be used on supported versions of Red Hat Enterprise Linux 7 only.

Before installing Red Hat Developer Toolset 3.1, it is recommended to apply all available Red Hat Enterprise Linux errata updates. This will enable all Red Hat Developer Toolset features and apply fixes that can otherwise impact the tools or built code.

Red Hat Developer Toolset 3.1 requires systems to be subscribed to the `Optional` channel in order to access all the necessary dependent packages required by the Red Hat Developer Toolset toolchain.

If you use Red Hat Subscription Manager:

> On Red Hat Enterprise Linux 6, select **System → Administration → Add/Remove Software** from the panel and navigate to **System → Software Sources**.

> On Red Hat Enterprise Linux 7, you can add these repositories by navigating to **Applications → System Tools → Red Hat Subscription Manager**.

Then enable the `Optional` channel for your system. For detailed information, see https://access.redhat.com/solutions/392003.

Users of RHN Classic or Red Hat Satellite can enable the `Optional` channel by following the instructions at https://access.redhat.com/solutions/70019.

1.2. Installation and Upgrading

Use of Red Hat Developer Toolset 3.1 requires the removal of any earlier pre-release versions, including Beta releases. If you have installed any previous version of Red Hat Developer Toolset, uninstall it from your system as described in the Uninstalling Red Hat Developer Toolset section of the *Red Hat Developer Toolset User Guide*.

Note that installing Red Hat Developer Toolset 3.x in parallel with Red Hat Developer Toolset 2.x or Red Hat Developer Toolset 1.x is supported.

For detailed information on installation of Red Hat Developer Toolset 3.1 see the Installing Red Hat Developer Toolset chapter of the *Red Hat Developer Toolset User Guide*.

The in-place upgrade from Red Hat Enterprise Linux 6 to Red Hat Enterprise Linux 7 is not supported by Red Hat Developer Toolset. As a consequence, the installed components might not work correctly after the upgrade. If you want to upgrade from Red Hat Enterprise Linux 6 to Red Hat Enterprise Linux 7, it is strongly recommended to remove all Red Hat Developer Toolset packages,

perform the in-place upgrade, update the Red Hat Developer Toolset repository, and install the Red Hat Developer Toolset packages again. It is advisable to back up all data before upgrading.

Chapter 2. Red Hat Developer Toolset 3.1 Release

This chapter serves as an overview of Red Hat Developer Toolset 3.1. It sums up its main features and changes, and provides a list of known issues.

2.1. Changes in Red Hat Developer Toolset 3.1

2.1.1. Upgraded Components

The following components have been upgraded in Red Hat Developer Toolset 3.1:

- **Eclipse** to version 4.4.2

- **GCC** to version 4.9.2

- **elfutils** to version 0.161

- **GDB** to version 7.8.2

- **SystemTap** to version 2.6

- **Valgrind** to version 3.10.1

- **Dyninst** to version 8.2.1

For detailed information on changes in Red Hat Developer Toolset 3.1, see Red Hat Developer Toolset User Guide.

2.1.2. Bug Fix and Enhancement Updates

The Red Hat Developer Toolset 3.1 release also includes a bug fix update of **ltrace** and enhancement update of **memstomp**.

The previously conflicting *libitm* and *libatomic* packages (**GCC** dependencies) have been removed from Red Hat Developer Toolset 3 for Red Hat Enterprise Linux 7.

2.1.3. Dockerfiles

This update introduces the *devtoolset-3-dockerfiles* subpackage for Red Hat Enterprise Linux 7. This package contains Dockerfiles for selected Red Hat Developer Toolset components, including their Red Hat Enterprise Linux 6 versions, which can be deployed only on Red Hat Enterprise Linux 7 Server. Dockerfiles are text documents that contain instructions for automated building of docker-formatted container images. The resulting container images can be used to run Red Hat Developer Toolset components inside virtual software containers, thus isolating them from the host system and allowing for their rapid deployment. Red Hat Developer Toolset 3.1 includes the following Dockerfiles:

- devtoolset-3-dyninst

- devtoolset-3-elfutils

- devtoolset-3-oprofile

- devtoolset-3-systemtap (available only for Red Hat Enterprise Linux 7)

- devtoolset-3-toolchain

‣ devtoolset-3-valgrind

For details, see Red Hat Developer Toolset User Guide.

2.2. Features

2.2.1. List of Components

Red Hat Developer Toolset 3.1 provides the following components:

Integrated Development Environments

‣ Eclipse

Development Tools

‣ GNU Compiler Collection (GCC)

‣ binutils

‣ elfutils

‣ dwz

Debugging Tools

‣ GNU Debugger (GDB)

‣ strace

‣ ltrace

‣ memstomp

Performance Monitoring Tools

‣ SystemTap

‣ Valgrind

‣ OProfile

‣ Dyninst

For details, see the Red Hat Developer Toolset Components table in the *Red Hat Developer Toolset User Guide*.

2.2.2. Main Features

The Red Hat Developer Toolset version of the **GNU Compiler Collection** (**GCC**) provides the following features:

‣ Link-time optimization (LTO) has been improved in a number of ways, so that it is faster, consumes less memory, and generates smaller object files.

‣ Inter-procedural analysis (IPA) has been improved, and speculative devirtualization optimization has been added.

- Support for profiling code has been made more reliable.

- The Intel AVX-512 target architecture is now supported, as well as a number of new Intel microarchitectures.

- A new pragma, `#pragma GCC ivdep`, has been added.

- Support for C11 has been improved, and ISO C11 atomics, generic selections, and thread-local storage are now supported.

- A subset of the functionality of C++11 **auto** is now provided in GNU C through a new extension, `__auto_type`.

- The C and C++ compilers now support the OpenMP 4.0 specification.

- The **g++** compiler offers improved support for various features of the C++ standard, including generic lambdas, variable-length arrays, and digit separators.

- The C++ runtime library C++11 support has been improved and now includes experimental support for the upcoming ISO C++ standard, C++14.

- **GCC** now adds support for Cilk+, an extension to the C and C++ languages for parallel programming.

The version of the **GNU Debugger** (**GDB**) included in Red Hat Developer Toolset provides the following new features:

- Python scripting support has been enhanced in a number of ways.

- Several new commands and enhancements in **GDB/MI** have been added.

- Support for the CTF (*Common Trace Format*) has been added.

- The btrace record target has been enhanced in a number of ways.

- The remote protocol and **GDBserver**, the **GDB** remote stub, have been enhanced in a number of ways.

Additionally, the Red Hat Developer Toolset version of **binutils** provides these features:

- The **objcopy** utility now supports wildcards for section names in command line options.

- The AVX-512 (512-bit Advanced Vector Extensions) are now supported.

For a full list of changes and features introduced in this release, see Red Hat Developer Toolset User Guide.

2.3. Known Issues

gcc component, valgrind component

The *devtoolset-3-gcc-debuginfo* and *devtoolset-3-valgrind-debuginfo* packages conflict with the corresponding packages from the base Red Hat Enterprise Linux system or from other versions of Red Hat Developer Toolset. Consequently, if conflicting debuginfo packages are installed, attempts to install Red Hat Developer Toolset 3.1 can fail with a transaction check error message similar to the following examples:

```
file /usr/lib/debug/usr/lib64/libitm.so.1.0.0.debug from install
of gcc-base-debuginfo-4.8.2-16.el7.x86_64 conflicts with file from
package devtoolset-3-gcc-debuginfo-4.9.2-5.2.el7.x86_64
```

```
file /usr/lib/debug/usr/lib64/libatomic.so.1.debug from install of
gcc-debuginfo-4.8.2-16.el7.x86_64 conflicts with file from package
devtoolset-3-gcc-debuginfo-4.9.2-5.2.el7.x86_64
```

```
file /usr/lib/debug/usr/lib64/libtsan.so.0.0.0.debug from install
of gcc-debuginfo-4.8.2-16.el7.x86_64 conflicts with file from
package devtoolset-3-gcc-debuginfo-4.9.2-5.2.el7.x86_64
```

```
file /usr/src/debug/valgrind-3.9.0/include/vki/vki-linux.h from
install of devtoolset-3-valgrind-debuginfo-3.10.1-1.el7.x86_64
conflicts with file from package valgrind-debuginfo-3.9.0-
6.el7.x86_64
```

To work around the problem, manually uninstall the conflicting debuginfo packages prior to installing Red Hat Developer Toolset 3.1.

gcc component

The *devtoolset-2-libtsan-devel* package from Red Hat Developer Toolset 2 conflicts with Red Hat Developer Toolset 3.1 due to a dependency on the *libtsan* package. Consequently, if the conflicting package is installed, an attempt to install Red Hat Developer Toolset 3.1 fails with the following error message:

```
Error: Package: devtoolset-2-libtsan-devel-4.8.2-15.1.el6.x86_64
(@<dts-2-repo>)
Requires: libtsan = 4.8.2-15.1.el6
Removing: libtsan-4.8.2-15.1.el6.x86_64 (@<dts-2-repo>)
libtsan = 4.8.2-15.1.el6
Updated By: libtsan-4.9.2-5.el6.x86_64
(rhel-x86_64-[server|workstation]-6-rhscl-1)
libtsan = 4.9.2-5.el6
```

To work around this problem, uninstall the *devtoolset-2-libtsan-devel* package prior to installing Red Hat Developer Toolset 3.1.

Note that *devtoolset-2-libtsan-devel* is not a part of the *devtoolset-2-toolchain* metapackage or the main *devtoolset-2* metapackage. To install *devtoolset-2-libtsan-devel*, the user needs to refer to it explicitly by name or by a wildcard. There is neither a conflict between *devtoolset-2-toolchain* and *devtoolset-3-toolchain*, nor a conflict between *devtoolset-2* and *devtoolset-3*, so most users should not be affected by the described problem.

valgrind component, BZ#869184

The default **Valgrind gdbserver** support (**--vgdb=yes**) can cause certain register and flags values to be not always up to date due to optimizations done by the **Valgrind** core. The **GDB** utility is therefore unable to show certain parameters or variables of programs running under **Valgrind**. To workaround this problem use the **--vgdb=full** parameter. Note that programs can run slower under **Valgrind** when this parameter is used.

valgrind component, BZ#990931

valgrind must be rebuilt without Red Hat Developer Toolset's **GCC** installed, or it will be used in preference to Red Hat Enterprise Linux system **GCC**. The binary files shipped by Red Hat are build using the system **GCC**. For any testing, Red Hat Developer Toolset's **GDB** should be used.

elfutils component

Rebuilding of **elfutils** from source is possible only using the base Red Hat Enterprise Linux toolchain. An attempt to recompile **elfutils** using Red Hat Developer Toolset will fail.

oprofile component

OProfile provides access to performance monitoring hardware only on physical machines. If you are using **OProfile** on a virtual machine guest, you need to force **OProfile** to use the timer mechanism with the following command:

```
~]$ opcontrol --deinit; modprobe oprofile timer=1
```

oprofile component

To enable **OProfile** to use the hardware performance units on Red Hat Enterprise Linux 6, you need to disable watchdog timers with the following command:

```
~]$ echo 0 > /proc/sys/kernel/nmi_watchdog
```

binutils component

Under certain circumstances, printing out information from an Executable Linking Format (ELF) file by using the eu-readelf utility fails with the following error message:

```
invalid CIE reference in FDE
```

To work around this problem, use the **--traditional-format** (or **-Wl**) option when linking the object files in the **GCC**. Alternatively, use the **-flto** and **-fno-fat-lto-objects** options for generating all object files.

gdb component

This release of **GDB** includes new implementation of dynamic types, the Variable Length Array (VLA) patches. Fortran slices and sub-matrices were implemented on top of the previous VLA implementation. This support has not been ported in time for Red Hat Developer Toolset 3.1 release of **GDB**. Consequently, Fortran slices and sub-matrices, for example, expressions like **a(2,2:3)**, **a(1,2:)**, **a(:,:)**, or **a(:)**, are not supported in this release although they were supported in previous Red Hat Developer Toolset releases. To work around this problem:

- Either print the whole array **a** and filter slices and sub-matrices out of the text output manually or by a script.

- Or create a new variable only for debugging purposes and assign to it the intended slice or sub-matrix in the Fortran program being debugged. This requires the program's recompilation for the next debugging session.

eclipse component

Under certain circumstances, on some Red Hat Enterprise Linux 6.5 systems, the **perf** utility returns improperly formatted data when the report command is run to show the number of

samples for each symbol (the **-n** option) using a particular field separator (the **-t** option) for columns. This problem has been addressed by a bug fix to the underlying perf utility in *kernel-2.6.32-421.el6*. Also, on 32-bit Intel architecture, the reported sample values are incorrect and appear to have underflown. As a consequence, the Eclipse Perf plug-in parses the data incorrectly and either does not report any samples captured, or displays them improperly.

Other Notes

» Red Hat Developer Toolset primarily aims to provide a compiler for development of user applications for deployment on multiple versions of Red Hat Enterprise Linux. Operating system components, kernel modules and device drivers generally correspond to a specific version of Red Hat Enterprise Linux, for which the supplied base OS compiler is recommended.

» Red Hat Developer Toolset 3.1 supports C, C++ and Fortran development only. For other languages, please invoke the system version of **GCC** available on Red Hat Enterprise Linux.

» Red Hat Developer Toolset 3.1 **Valgrind** contains experimental support for some AVX2 instructions.

» Building an application with Red Hat Developer Toolset 3.1 on Red Hat Enterprise Linux (for example: Red Hat Enterprise Linux 7) and then executing that application on an earlier minor version (such as Red Hat Enterprise Linux 6.5.z) may result in runtime errors due to differences in non-toolchain components between Red Hat Enterprise Linux releases. Users are advised to check compatibility carefully. Red Hat only supports execution of an application built with Red Hat Developer Toolset on the same, or a later, supported release of Red Hat Enterprise Linux than the version used to build that application.

» All code in the non-shared library **libstdc++_nonshared.a** in Red Hat Developer Toolset 3.1 is licensed under the GNU General Public License v3 with additional permissions granted under Section 7, described in the GCC Runtime Library Exception version 3.1, as published by the Free Software Foundation.

» The compiler included in Red Hat Developer Toolset emits newer DWARF debugging records than previous compilers available on Red Hat Enterprise Linux. These new debugging records improve the debugging experience in a variety of ways, particularly for C++ and optimized code. However, certain tools are not yet capable of handling the newer DWARF debug records. To generate the older style debugging records, use the options **-gdwarf-2 -gstrict-dwarf** or **-gdwarf-3 - gstrict-dwarf**.

» Some newer library features are statically linked into applications built with Red Hat Developer Toolset to support execution on multiple versions of Red Hat Enterprise Linux. This adds a small additional security risk as normal Red Hat Enterprise Linux errata would not change this code. If the need for developers to rebuild their applications due to such an issue arises, Red Hat will signal this via a security erratum. Developers are strongly advised not to statically link their entire application for the same reasons.

» Note that error messages related to a missing **libitm** library when using the **-fgnu-tm** option require the *libitm* package to be installed. You can install the package with the following command:

```
yum install libitm
```

» The **ccache** utility can be used with **GCC** included in Red Hat Developer Toolset by setting your environment correctly. For example:

```
~]$ scl enable devtoolset-3 '/usr/lib64/ccache/gcc -c foo.c'
```

Alternatively, you can create a shell with the Red Hat Developer Toolset version of **GCC** as the default compiler:

```
~]$ scl enable devtoolset-3 'bash'
```

After you have created the shell, run the following two commands:

```
~]$ export PATH=/usr/lib64/ccache${PATH:+:${PATH}}
```

```
~]$ gcc -c foo.c
```

» Because the **elfutils** libraries contained in Red Hat Developer Toolset 3.1 are linked to a client application statically, caution is advised when passing handles to libelf, libdw, and libasm data structures to external code and when passing handles received from external code to libelf, libdw, and libasm.

Be especially careful when an external library, which is linked dynamically against the system version of **elfutils**, is passed a pointer to a structure that comes from the Red Hat Developer Toolset 3.1 version of **elfutils** (or vice versa).

Generally, data structures used in the Red Hat Developer Toolset 3.1 version of **elfutils** are not compatible with the Red Hat Enterprise Linux system versions, and structures coming from one should never be touched by the other.

In applications that use the Red Hat Developer Toolset 3.1 libraries, all code that was linked against the system version of the libraries should be recompiled against the libraries included in Red Hat Developer Toolset 3.1.

» elfutils EBL, a library used internally by libdw, was amended not to open back ends dynamically. Instead, a selection of back ends is compiled in the library itself: Intel x86 (i386), AMD64 / Intel 64 (x86_64), Intel Itanium, and IBM System z. Some functionality may not be available if the client wishes to work with ELF files from architectures other than those mentioned above.

» With the Red Hat Developer Toolset 3.1 release, you can now use **Valgrind**'s libmpiwrap wrapper with either the *openmpi* package or the *compat-openmpi* compatibility package. When using **Valgrind** on Red Hat Enterprise Linux 6, specify whether you want to use the *openmpi* or *compat-openmpi* package by updating the **LD_PRELOAD** environment variable.

To use the *openmpi* package with the libmpiwrap wrapper, update **LD_PRELOAD** as follows:

```
LD_PRELOAD=/opt/rh/devtoolset-3/root/usr/lib64/valgrind/libmpiwrap-
amd64-linux.so:/usr/lib64/openmpi/lib/libmpi.so
/usr/lib64/openmpi/bin/mpirun valgrind ./mpi-hello
```

Where **mpi-hello** is compiled with the appropriate mpicc compiler.

To use the *compat-openmpi* package with the libmpiwrap wrapper, update **LD_PRELOAD** as follows:

```
LD_PRELOAD=/opt/rh/devtoolset-3/root/usr/lib64/valgrind/libmpiwrap-
amd64-linux.so:/usr/lib64/compat-openmpi/lib/libmpi.so
/usr/lib64/compat-openmpi/bin/mpirun valgrind ./mpi-hello
```

Where **mpi-hello** is compiled with the appropriate mpicc compiler.

To test that the above works as expected and the MPI calls are intercepted by the wrapper, set the environment variable **MPIWRAP_DEBUG** to **verbose**.

≫ Some packages managed by the **scl** utility include privileged services that require **sudo**. The system **sudo** clears environment variables and so Red Hat Developer Toolset includes its own **sudo** shell script, wrapping **scl enable**. This script does not currently parse or pass normal **sudo** options, only **sudo** *COMMAND ARGS ...*. In order to use the system version of **sudo** from within a Red Hat Developer Toolset-enabled shell, please use the **/usr/bin/sudo** binary.

≫ Red Hat Developer Toolset 3.1 includes **GCC** 4.9, which adds support for **Cilk+**, an extension to the C and C++ languages for parallel programming. A new runtime library, **libcilkrts**, is included in this release to support the feature. The **libcilkrts** library will be a part of the *gcc-libraries* package in the future Red Hat Enterprise Linux releases but the package is not included in all supported Red Hat Enterprise Linux releases. To enable dynamic linkage of binaries and libraries built with Red Hat Developer Toolset 3.1 **GCC** using **Cilk+** features on supported Red Hat Enterprise Linux releases that do not contain **libcilkrts**, install the **libcilkrts.so** shared library from Red Hat Developer Toolset 3.1 with such binaries or libraries.

≫ The **Eclipse** OProfile plug-in in Red Hat Developer Toolset 3.1 uses the **OProfile** utility from this Software Collection (the *devtoolset-3-oprofile* packages) by default. The plug-in does not support the usage of the **OProfile** utility included in the base Red Hat Enterprise Linux 6.4 or Red Hat Enterprise Linux 6.5 system (the *oprofile* packages).

≫ Intel have issued erratum HSW136 concerning TSX (Transactional Synchronization Extensions) instructions. Under certain circumstances, software using the Intel TSX instructions may result in unpredictable behavior. TSX instructions may be executed by applications built with Red Hat Developer Toolset **GCC** under certain conditions. These include use of **GCC**'s experimental Transactional Memory support (using the **-fgnu-tm** option) when executed on hardware with TSX instructions enabled. The users of Red Hat Developer Toolset are advised to exercise further caution when experimenting with Transaction Memory at this time, or to disable TSX instructions by applying an appropriate hardware or firmware update.

≫ The Eclipse SWT graphical library on Red Hat Enterprise Linux 7 uses GTK 3.x. Eclipse **Dark Theme** is not yet fully stable on GTK 3.x, so this theme is considered a Technology Preview and not supported. For more information about Red Hat Technology Previews, see https://access.redhat.com/support/offerings/techpreview/.

Chapter 3. Additional Resources

For more information about Red Hat Developer Toolset 3.1 and Red Hat Enterprise Linux, see the resources listed below.

3.1. Red Hat Enterprise Linux Developer Program Group

Users of Red Hat Developer Toolset can access the Red Hat Enterprise Linux Developer Program Group in the Red Hat Customer Portal to get developer related information for the development tools available for Red Hat Enterprise Linux. In addition, users can find there developer related papers and videos on topics that are of interest to developers, for example RPM building, threaded programming, performance tuning, debugging, and so on.

➢ To visit the Red Hat Enterprise Linux Developer Program Group, log in to the Red Hat Customer Portal, click **Products and Services** at the top of the page, choose **Services**, and then **Red Hat Enterprise Linux Developer Program** from the list.

3.2. Red Hat Product Documentation

The **Red Hat Documentation** portal located at https://access.redhat.com/documentation/ serves as a central source of all product documentation. It is translated in 22 languages and for each product, it provides different kinds of books from release and technical notes to installation, user, and reference guides in HTML, PDF, and EPUB formats.

The following is a brief list of documents that are directly or indirectly relevant to this book:

➢ Red Hat Developer Toolset 3.1 User Guide — The *User Guide* for Red Hat Developer Toolset contains more information about installing and using this content set.

➢ Red Hat Software Collections 2.0 Packaging Guide — The *Packaging Guide* for Red Hat Software Collections explains the concept of Software Collections, documents the `scl` utility, and provides a detailed explanation of how to create a custom Software Collection or extend an existing one.

➢ Red Hat Software Collections 2.0 Release Notes — The *Release Notes* for Red Hat Software Collections document known problems, possible issues, and other important information available at the time of release of the content set. They also contain useful information on installing, rebuilding, migrating etc.

➢ Red Hat Enterprise Linux 6 Developer Guide — The *Developer Guide* for Red Hat Enterprise Linux 6 provides detailed information on the Eclipse IDE, libraries and runtime support, compiling and building, debugging, and profiling.

➢ Red Hat Enterprise Linux 7 Developer Guide — The *Developer Guide* for Red Hat Enterprise Linux 7 provides an introduction to application development tools in Red Hat Enterprise Linux 7.

3.3. Red Hat Developer Blog

Red Hat Developer Blog content is directed to designers and developers of applications based on Red Hat technologies. It contains links to product team blogs and other relevant internal and external resources. Its goal is to inform and engage the developer community with up-to-date information, best practices, opinion, product and program announcements as well as pointers to sample code and other resources.

Appendix A. Revision History

Revision 1.0-18	**Thu Jun 04 2015**	**Lenka Špačková**

Updates regarding the release of Red Hat Software Collections 2.0.

Revision 1.0-16	**Thu Apr 23 2015**	**Lenka Špačková**

Release of Red Hat Developer Toolset 3.1 Release Notes.

Revision 1.0-11	**Tue Mar 10 2015**	**Lenka Špačková**

Release of Red Hat Developer Toolset 3.1 Beta Release Notes.