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# XinuOS

## SCO OpenServer® 5 Definitive Extended Development System (XDEV)

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## Typographical Conventions

This document follows these conventions

Convention	Usage	Examples
<b>NOTE:</b>	Important additional information or further explanation of a topic.	<b>Note:</b> A weekly backup is recommended.
<b>WARNING!</b>	The task or operation might have serious consequences if conducted incorrectly or without appropriate safeguards.	<b>WARNING!</b> Do not change configuration parameters.
<b>Bold</b>	A command or system input that you type, or text or a button you select on a screen.	Click <b>HELP</b> for details on disaster recovery.
<i>Italic</i>	Italic font indicates any of the following: <i>A term with a specific meaning</i> in the context of this document. <i>Emphasis</i> on specific information. <i>Reference</i> to another document. <i>Variables</i> in a syntax statement for which values are substituted.	Detailed information on <i>disaster recovery</i> methods is available in the <i>Administrator Guide</i> . <b>tar [zxvf] file.tgz</b>
Courier	System output, file names or path names.	<code>&gt; Recovery in progress</code>
	Bold Courier for commands typed by user.	<code><b>tar cvf tarfile *.cc</b></code>
Angle <> Brackets	A required entry or parameter	installer- <i>&lt;version#&gt;</i> .run
Square [] Brackets	An optional entry or parameter.	tar [zxvf] file.tgz
Curly { } Brackets	A list of choices separated by a vertical bar   from which one must be selected.	Click { OK   Cancel }.

# Overview

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The SCO OpenServer® 5 Definitive Extended Development System (**XDEV**) is a new OpenServer 5 Definitive development system in addition to the existing two current OpenServer 5 development systems:

- The SCO OpenServer Development System was provided with OpenServer 5.0.7 and later releases to create and run traditional OpenServer 5 applications.
- The UnixWare and OpenServer Development Kit (UDK) was available for OpenServer 5.0.7 and later releases to develop applications on OpenServer 5 and UnixWare 7.

XDEV is provided to develop and run binaries from gcc 4.2.4. applications on OpenServer 5 Definitive 2018 and future releases. Two complimentary updates (a new **pth** 2.0.7 Tc component and the OSS683 patch, version D or later), are needed for XDEV to function correctly, as described in the next section.

XDEV includes these components, among others:

- GNU Compilation Collection (**gcc**), version 4.2.4Aa
- GNU Debugger (**gdb**), version 5.3Aa
- GNU Binary Utilities (**binutils**), version 2.24Aa
- GNU Autoconf (**autoconf**), version 2.65Aa
- GNU Automake (**automake**), version 1.16.4Aa
- bzip2 - High-quality Data Compressor (**bzip2**), version 1.0.8Aa
- Public Domain Korn Shell (**pdksh**), version 5.2.14Aa
- GNU Diff Utilities (**diffutils**), version 3.34Aa
- GNU Bison (yacc Replacement) (**bison**), version 3.8.2Aa
- GNU M4 Macro Processor (**m4**), version 1.4.9Aa
- GNU make (**make**), version 3.80Aa
- GNU sed Stream Editor (**sed**), version 4.2.2Aa
- GNU tar - Archiving Program for Storing Multiple Files in a Single Archive (**tar**), version 1.30Aa
- xz Compression Library and Utilities (**xz**), version 5.2.5Aa
- GNU roff Text Processing (**groff**), version 1.20.1Aa
- GNU DejaGNU Test Framework (**dejagnu**), version 1.6.3Aa
- expect Tool (**expect**), version 5.45.4Aa
- TCL - High-Level Interpreted, Dynamic Programming Language (**tcl**), version 8.5.19Aa
- Berkeley DB - An Embeddable Database (**db5**), version 5.3.28Aa

A full listing of the XDEV components is provided in Appendix A of this document.

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## Prerequisites

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XDEV requires the following to function:

- **OpenServer 5 Definitive 2018** - This supplement will not install on older OpenServer releases since those releases lack the required updates to support XDEV.
- **pth 2.0.7 Tc** or later version: Although not required to install, XDEV requires the pth 2.0.7 thread implementation to function correctly. There is no official support by XinuOS for PTH, It is provided only for use with the OpenServer 5 Definitive **vmtools** component and the XDEV gcc compiler.
- **OSS683D**, or later version: Although not required to install XDEV, the OSS683 patch is needed to provide header file changes that are carefully constructed to allow OpenServer 5 Definitive application to be correctly defined for both the original OpenServer 5 compiler and the new **XDEV gcc** compiler.

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## Licensing

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XDEV is available for OpenServer 5 Definitive 2018 and does not have any additional licensing conditions.

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## Installation Instructions

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XDEV can be installed via any of the three methods described next.

### Recommended Method: **patchck**

**patchck** is the preferred tool for installing XDEV. It checks for prerequisites and ensures that the latest OSS683 super patch and **pth** version 2.0.7 are both installed. It also checks that your system is up-to-date with the latest OpenServer 5 Definitive 2018 software, and offers you choices for installing the latest.

To use:

1. Log into your OpenServer 5 Definitive 2018 system as **root**.
2. Run:

```
patchck -o dev
```

Select to install all items displayed. When the installation completes:

3. XDEV does not require a reboot after installation. However, other components and/or patches that you install along with XDEV may. If a reboot is needed, **patchck** and **custom** (which **patchck** calls) will alert you with a message at the end of the installation. If such a message is displayed, reboot your system before using the newly installed components and patches.

## Command-Line Method

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**NOTE:** Be sure to only install on SCO OpenServer® 5 Definitive 2018. Otherwise you will encounter errors and need to follow the procedure in the *Limitations and Known Problems* section below.

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To install the XDEV custom product, run the commands below and answer the prompts to install all of the XDEV components.

1. Log in as **root** on an **OpenServer 5 Definitive 2018** system with **pth** 2.0.7 and OSS683 installed.
2. Create an empty directory, such as **/tmp/XDEV**, to which the patch will be downloaded.
3. Download the **5D\_xdev\_VOLS.tar** tar file from <https://download.xinuos.com/openserver5D/D2M1/packages> to the directory created in Step 2.
4. Unwind the tar file in that directory:

```
tar -xf 5D_xdev_VOL5.tar
```

5. While in the directory created in Step 2, install XDEV:

```
custom -z `pwd` -i -p Xinuos:XDEV
```

## Traditional Software Manager Method

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**NOTE:** Be sure to only install on SCO OpenServer® 5 Definitive 2018. Otherwise you will encounter errors and need to follow the procedure in the *Limitations and Known Problems* section below.

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1. Log in as **root**.
2. Create an empty directory, such as **/tmp/XDEV**, to which the patch will be downloaded.
3. Download the **5D\_xdev\_VOLS.tar** tar file from <https://download.xinuos.com/openserver5D/D2M1/packages> to the directory created in Step 2.
4. Unwind the tar file in that directory:

```
tar -xf 5D_xdev_VOL5.tar
```

5. Run the Software Manager with the command:

```
scoadmin software
```

or double-click on the Software Manager icon in the desktop.

6. Pull down the "Software" menu and select "Install New".
7. When prompted for the host from which to install, choose the local machine and then "Continue".
8. In the "Select Media" menu, pull down the "Media Device" menu; select "Media Images"; and then choose "Continue".
9. When prompted for the "Image Directory", enter the directory where you unwound the the **tar** file in Step 3 (for example, **/tmp/XDEV**), and choose "OK."
10. When prompted to select software to install, make sure that the "SCO OpenServer 5 Definitive Extended Development System (XDEV)" entry is highlighted. Then choose "Install".
11. Once installation of the **SCO OpenServer 5 Definitive Extended Development System (XDEV)** is complete, exit the Software Manager by selecting "Exit" from the "Host" menu.
12. Optional: Once the installation has completed, you can remove or archive the **tar** file and the containing directory created in Steps 2 and 3.

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## Removal Instructions

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**NOTE:** Installing and removing XDEV removes XDEV files and symbolic links. However, the **/usr/xdev** directory structure remains. This is because you may choose, and we recommend, installing into **/usr/xdev** applications created using/that use the XDEV compiler.

If you want to remove this directory, please first confirm that the directory is empty by running `find /usr/xdev -type f` and, if it is, running `rm -rf /usr/xdev`. Be sure not to run this **rm** command until after you have completely removed the XDEV custom product and any other applications using this directory.

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You can remove the XDEV custom product from the command-line by running this command as **root**:

```
custom -r -p Xinuos:XDEV
```

Alternatively, you can remove XDEV by the standard Software Manager custom product removal procedure:

1. Log in as **root**.
  2. Execute the command:  
`scoadmin software`  
or double-click on the Software Manager icon in the desktop.
  3. Highlight the entry beginning with "SCO OpenServer 5 Definitive Extended Development System (XDEV)" entry. If there are multiple such entries, choose the one with the latest version.
  4. Pull down the "Software" menu and select "Remove Software".
  5. Once the removal finishes, quit the Software Manager. A reboot after removal is not required.
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# Porting Notes

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Here are some porting notes and recommendations:

- This update enables porting applications using the GNU compiler collection (**gcc-4.2.4**) while not interfering with applications that depend on the OpenServer 5 Development System or the UDK. We accomplish this by placing the new compiler in its own new area under **/usr/xdev**.
- To differentiate between the native SCO Development System and new XDEV Extended Development System, we changed the manifest define from **\_SCO\_DS** to **\_\_OSR5\_GCC\_\_** for the GNU Compiler Collection (GCC) on OpenServer 5 Definitive. The new XDEV GCC compiler supports long long types where the native compiler does not.

For example:

```
#if defined(_SCO_DS_LL) || defined(__OSR5_GCC__)
  #ifndef _UINT64_T
    #define _UINT64_T
    typedef unsigned long long uint64_t;
  #endif
#endif
```

- Some Open Source Projects will have the native compiler defines and will need to be changed to the new GCC **define** "**\_\_OSR5\_GCC\_\_**" when using the GNU Compiler Collection (GCC). If both are desired.

```
#if defined(_SCO_DS) || defined(__OSR5_GCC__)
or
#if !defined(_SCO_DS) && !defined(__OSR5_GCC__)
```

- When developing applications you may want to update your environment as follows:

Add the appropriate **/usr/xdev** subdirectories to your **PATH**, **LD\_LIBRARY\_PATH**, **LIBPATH**, and **MANPATH** environment variables as appropriate.

For example:

```
LD_LIBRARY_PATH=/usr/xdev/lib:$LD_LIBRARY_PATH
LIBPATH=/usr/xdev/lib:$LIBPATH
MANPATH=/usr/xdev/man:$MANPATH
PATH=/usr/xdev/bin:$PATH
```

In this example, the **/usr/xdev** entries are listed first in the various paths to ensure that the XDEV version of files are used instead of earlier versions.

- To use **bmake**, set the following:

```
MAKESYSPATH=/usr/xdev/share/mk/  
export MAKESYSPATH
```

- When porting applications, we recommend redirecting the configure command output to a file as well as to your screen. We typically use **2>&1 | tee output\_file**. When asking for help with porting issues, this output and **config.log** can be very helpful to provide.

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## User Notes

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To use the OpenServer 5 Definitive Extended Development System and the utilities that it provides:

- Your PATH should include: **/usr/xdev/bin**

Some utilities have multiple versions provided by various OpenServer 5 Definitive 2018 **custom** products. For example, different versions of **tar/gtar** are provided in these locations: **/usr/bin/tar** (original OpenServer 5), **/usr/gnu/bin/tar** (earlier GNUTOOLS version), and **/usr/xdev/bin/tar** (XDEV version). You can ensure that the newer XDEV versions of such applications is used by setting your PATH as follows: **PATH=/usr/xdev/bin:\$PATH**

- To see the XDEV version of manual pages, add **/usr/xdev/man** to the **MANPATH** variable and/or in **/etc/default/man** file. As above, placing **/usr/xdev/man** early in your path ensures that the **man** command displays it first instead of displaying an earlier version first.
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# Limitations and Known Problems

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## Accidentally Installed on the Wrong Operating System Version

**XDEV** only functions and installs on OpenServer 5 Definitive 2018. If you try to install on any other operating system version, you will get a series of error prompts. Per component, a prompt will advise you that component cannot be properly installed. Various unhelpful remnants, however, do get installed and should be properly removed.

If you encounter this problem:

1. Answer "Ok" to each prompt.
2. Log in as **root** and run this command to remove the remnants:

```
custom -r -p Xinuos:XDEV
```

3. Upgrade your system to OpenServer 5 Definitive 2018 and install again. Or install on another OpenServer 5 Definitive 2018 system.

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## Appendix A - XDEV Components

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The new XDEV **custom** product provides these **custom** components:

- GNU Autoconf (**autoconf**), version 2.65Aa
- GNU Automake (**automake**), version 1.16.4Aa
- GNU Binary Utilities (**binutils**), version 2.24Aa
- GNU Bison (yacc Replacement) (**bison**), version 3.8.2Aa
- bmake NetBSD Make (**bmake**), version 20211020Aa
- bzip2 - High-quality Data Compressor (**bzip2**), version 1.0.8Aa
- cmake Build Tool (**cmake**), version 3.6.3Aa
- GNU Core Utilities (**coreutils**), version 6.7Aa
- Berkeley DB - An Embeddable Database (**db5**), version 5.3.28Aa
- GNU DejaGNU Test Framework (**dejagnu**), version 1.6.3Aa
- GNU Diff Utilities (**diffutils**), version 3.3Aa
- expect Tool (**expect**), version 5.45.4Aa
- GNU Flex (lex Replacement) (**flex**), version 2.6.4Aa
- GNU Compiler Collection (**gcc**), version 4.2.4Aa
- GNU Debugger (**gdb**), version 5.3Aa
- GNU Gettext (**gettext**), version 0.19.8.1Aa

- GNU GMP - Multiple-Precision Arithmetic Library (**gmp**), version 6.1.2Aa
- GNU gperf - Perfect Hash Function Generator (**gperf**), version 3.0.4Aa
- GNU roff Text Processing (**groff**), version 1.20.1Aa
- libcx (strtol Function) (**libcx**), version 0.0.1Aa
- GNU libiconv (**libiconv**), version 1.16Aa
- libnbcCompat - Portable NetBSD-Compatibility Library (**libnbcCompat**), version 20150419Aa
- GNU libtool (**libtool**), version 2.4.2Aa
- GNU M4 Macro Processor (**m4**), version 1.4.9Aa
- GNU make (**make**), version 3.80Aa
- GNU MPC - Complex High-Precision Number Library (**mpc**), version 1.1.0Aa
- GNU MPFR Library - Multiple-Precision Floating-Point Computations Library (**mpfr**), version 4.0.2Aa
- Public Domain Korn Shell (**pdksh**), version 5.2.14Aa
- GNU readline (**readline**), version 8.1Aa
- GNU sed Stream Editor (**sed**), version 4.2.2Aa
- GNU tar - Archiving Program for Storing Multiple Files in a Single Archive (**tar**), version 1.30Aa
- TCL - High-Level Interpreted, Dynamic Programming Language (**tcl**), version 8.5.19Aa
- GNU TeXinfo Documentation System (**texinfo**), version 4.9Aa
- xz Compression Library and Utilities (**xz**), version 5.2.5Aa

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