VSI OpenVMS

VSI x86-64 Cross-tools Kit
Installation and Startup Guide

Date: April 2021

This document describes how to install and setup your VSI x86-64 Cross-tools Kit.

Cross-tools Kit Version: VSI-I64VMS-X86_XTOOLS-V0900-H_XFX8-1

This cross-tools kit is intended for use in a non-production (test) system and is provided as-is for your testing use only.

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Preface

Intended Audience

You have been selected to participate in VSI x86-64 cross-tools testing. This cross-tools kit is intended for use in a non-production (test) system. The software is provided as-is for your testing use only.

Prerequisites

This kit must be installed on an Itanium system running some version of VSI OpenVMS.

VSI x86-64 Cross-tools Kit Installation and Startup

This section provides instructions for how to unzip, install, and start up the VSI x86-64 Cross-tools Kit.

1. Unzipping the Kit

Once you have located and downloaded the ZIPEXE file, use the RUN command to UNZIP the file:

```
$ run VSI-I64VMS-X86_XTOOLS-V0900-H_XFX8-1.ZIPEXE
```

2. Installing the VSI x86-64 Cross-tools Kit

This section provides instructions for how to install the VSI x86-64 Cross-tools Kit using PCSI on an IA64 server.

Note: The time needed to perform an installation will vary. VSI has observed that installations performed on an rx2660 that is booted from a disk that is a locally attached SCSI drive takes about 10 minutes. When performed on that same rx2660 that was booted from a Fibre Channel disk, installation time is substantially shorter taking a little less than 4 minutes.

Enter the following command on your IA64 system:

```
$ PRODUCT INSTALL X86_XTOOLS /SOURCE=ddcu:[dir]
```

The installation of the cross-tools kit begins, as shown in this example:

```
Performing product kit validation of signed kits ...
%PCSI-I-VSIVALPASSED, validation of $1$DGA452:[X86_XTOOLS]VSI-I64VMS-X86_XTOOLS-
V0900-H_XFX8-1.PCSI$COMPRESSED;1 succeeded

The following product has been selected:
    VSI I64VMS X86_XTOOLS V9.0-H_XFX8      Layered Product

Do you want to continue? [YES]

Configuration phase starting ...

You will be asked to choose options, if any, for each selected product and for
any products that may be installed to satisfy software dependency requirements.

Configuring VSI I64VMS X86_XTOOLS V9.0-H_XFX8: X86 cross-architecture toolkit for IA64 VMS (base
level XFX8)

    Copyright 2014, 2021 VMS Software, Inc.

    VMS Software, Inc.

    Some components of this kit require a Product Authorization Key (PAK)

* This product does not have any configuration options.

    The following cross-tools will be installed:

         Bliss-32        T1.12-122-50U6A                10-JUN-2020
         Bliss-64        T1.12-122-50U6A                10-JUN-2020
         XCC$COMPILER    X7.4-407-50UBC                 12-NOV-2020
         XMacro          X6.0-105                       17-MAR-2021
         Message         I01-10 (XFW4-T7Y-000000)       12-MAR-2021
         CDU             I01-12 (XFW4-T7Y-000000)       12-MAR-2021
         ANALYZOBJ       I01-81 (XFW4-T7Y-000000)       12-MAR-2021
         LLVM-MC         V1.0                            5-FEB-2020
         LINKer          I02-83 (XFW4-T7Y-000000)       12-MAR-2021
         CrfShr          I1.106 (XFW4-T7Y-000000)       12-MAR-2021
         Librarian       I01-46 (XFW4-T7Y-000000)       12-MAR-2021
         LbrShr          I01-45 (XFW4-T7Y-000000)       12-MAR-2021
         F90 (Fortran)   F90 X8.4-104965                 5-APR-2021
         Cobol           COBOL X3.1-000B                24-SEP-2020
         Pascal          X6.3-131-50UC1                  1-DEC-2020

         LIB and STARLET are supplied from the XFX8 result disk
         which was built on Tuesday, 6-APR-2021.


    Components requiring Product Authorization Keys (PAKs):

         The F90 (Fortran-90) and COBOL components of this toolkit
         each require a Product Authorization Key (PAK).

         Licenses are not required for any other components of this toolkit.



Execution phase starting ...

The following product will be installed to destination:
    VSI I64VMS X86_XTOOLS V9.0-H_XFX8      DISK$FRED_V842L1:[VMS$COMMON.]

Portion done: 0%...10%...20%...30%...40%...50%...60%...80%...90%...100%

The following product has been installed:
    VSI I64VMS X86_XTOOLS V9.0-H_XFX8      Layered Product

%PCSI-I-IVPEXECUTE, executing test procedure for VSI I64VMS X86_XTOOLS V9.0-H_XFX8 ...

        Executing X86_XTOOLS$STARTUP.COM

        Executing X86_XTOOLS$SYLOGIN.COM

        Maps, listings, sources, etc. can be found in X86$IVP: (X86_XTOOLS$ROOT:[SYS$IVP])


        Compiling DEC C, Bliss-32, Bliss-64, XMACRO & CDU objects...
          (& running ANALYZE/OBJECT after compilation)

              .
              .
              .

        Linking images (compilation warnings are possible but not expected)...

$ !
$ link x86_xtools$ivp.olb/include=x86_xtools$ivp_decc    /executable=x86_xtools$ivp_decc
/map=x86_xtools$ivp_decc
$ link x86_xtools$ivp.olb/include=x86_xtools$ivp_bliss32 /executable=x86_xtools$ivp_bliss-32
/map=x86_xtools$ivp_bliss-32
$ link x86_xtools$ivp.olb/include=x86_xtools$ivp_bliss64 /executable=x86_xtools$ivp_bliss-64
/map=x86_xtools$ivp_bliss-64
$ link x86_xtools$ivp.olb/include=x86_xtools$ivp_xmacro  /executable=x86_xtools$ivp_xmacro
/map=x86_xtools$ivp_xmacro
$ link x86_xtools$ivp.olb/include=x86_xtools$ivp_f90     /executable=x86_xtools$ivp_f90
/map=x86_xtools$ivp_f90
```

```
$ link x86_xtools$ivp.olb/include=x86_xtools$ivp_cobol   /executable=x86_xtools$ivp_cobol
/map=x86_xtools$ivp_cobol
%ILINK-W-COMPWARN, compilation warnings
        shareable image: X86_XTOOLS$ROOT:[SYSLIB]DEC$COBRTL.EXE;1
$ link x86_xtools$ivp.olb/include=x86_xtools$ivp_pascal  /executable=x86_xtools$ivp_pascal
/map=x86_xtools$ivp_pascal
$ !

%PCSI-I-IVPSUCCESS, test procedure completed successfully

VSI I64VMS X86_XTOOLS V9.0-H_XFX8: X86 cross-architecture toolkit for IA64 VMS (base level XFX8)

    The following startup, login and verification files are supplied by this kit:

         SYS$STARTUP:X86_XTOOLS$STARTUP.COM
         SYS$MANAGER:X86_XTOOLS$SYLOGIN.COM
            SYS$TEST:X86_XTOOLS$IVP.COM


    Release notes from this kit are available in SYS$HELP

         The PCSI kit release notes are copied to the system disk during kit
         installation and are available as a standard text file which may be
         read using the TYPE command or from an editor:

             SYS$HELP:X86_XTOOLS-V0900-H_XFX8.RELEASE_NOTES

$
```

The V9.0-H_XFX8 cross-tools kit release notes are located in SYS$SYSROOT:[SYSHLP]X86_XTOOLS-V0900-H_XFX8.RELEASE_NOTES.

3. Upgrading to the Cross-tools Kit V9.0-H_XFX8

If you have an earlier version of the cross-tools kit installed on your system, you can easily upgrade to the V9.0-H_XFX8 cross-tools kit by performing the standard installation procedure described in the Installing the VSI x86-64 Cross-tools Kit section. The installation procedure will remove the earlier version of the cross-tools kit and install the V9.0-H_XFX8 kit, as shown in this example:

```
     .
     .
     .
Execution phase starting ...

The following product will be installed to destination:
    VSI I64VMS X86_XTOOLS V9.0-H_XFX8      DISK$FRED_V842L1:[VMS$COMMON.]
The following product will be removed from destination:
    VSI I64VMS X86_XTOOLS V9.0-G_XFUL      DISK$FRED_V842L1:[VMS$COMMON.]

Portion done: 0%...10%...20%...30%...40%...50%...60%...80%...90%...100%

The following product has been installed:
    VSI I64VMS X86_XTOOLS V9.0-H_XFX8      Layered Product
The following product has been removed:
    VSI I64VMS X86_XTOOLS V9.0-G_XFUL      Layered Product

%PCSI-I-IVPEXECUTE, executing test procedure for VSI I64VMS X86_XTOOLS V9.0-H_XFX8 ...
     .
     .
     .
```

4. Setting Up and Starting the VSI x86-64 Cross-tools Kit

This section provides instructions for starting and setting up your cross-tools environment. The following list describes the three login and verification files that are needed.

- SYS$STARTUP:X86_XTOOLS$STARTUP.COM: This command procedure defines /SYSTEM logical names and needs to be run by a privileged user once. Optionally, it can be added to the system startup file (invoked within SYSTARTUP_VMS.COM). It needs to be run at least once to define the X86$ logical names, which are listed later in this section.

- SYS$MANAGER:X86_XTOOLS$SYLOGIN.COM: This command procedure performs the following functions:
  1. Defines /PROCESS logical names
  2. Adds the cross-tools specific command definitions to the CLI table of a process
  3. Sets up DCL global symbols (which shows how someone might define their own DCL symbols to run any of the tools)

  The file can be run by anyone who wants to use the tools. Each process is required to have these items set up in order to use the cross-tools. It assumes that the /SYSTEM logicals are defined. The command procedure can be added to the system-wide sylogin file (invoked within SYLOGIN.COM), or added by any user to a personal login file.

- SYS$TEST:X86_XTOOLS$IVP.COM: This command procedure can be run at any time by a privileged user. Its primary purpose is to be run as part of the installation to verify that the installation completed as expected. This command file runs automatically and unconditionally when the cross-tools kit is installed, although it can be run again at any time after the installation.

Enter the following command to list the system logicals defined by the startup file:

```
$ SHOW LOGICAL X86* /SYSTEM

(LNM$SYSTEM_TABLE)

  "X86$ETC" = "X86_XTOOLS$ROOT:[SYS$ETC]"
  "X86$HELP" = "X86_XTOOLS$ROOT:[SYSHLP]"
  "X86$IVP" = "X86_XTOOLS$ROOT:[SYS$IVP]"
  "X86$LIBRARY" = "X86_XTOOLS$ROOT:[SYSLIB]"
  "X86$LOADABLE_IMAGES" = "X86_XTOOLS$ROOT:[SYS$LDR]"
  "X86$MESSAGE" = "X86_XTOOLS$ROOT:[SYSMSG]"
  "X86$SYSTEM" = "X86_XTOOLS$ROOT:[SYSEXE]"
  "X86$UPDATE" = "X86_XTOOLS$ROOT:[SYSUPD]"
  "X86_XTOOLS$ROOT" = "FRED$DKA400:[SYS0.SYSCOMMON.X86_XTOOLS$ROOT.]"

(LNM$SYSCLUSTER_TABLE)
$
```

5. Showing the Process Logicals

Use the following command to show the process logicals and DCL global symbols by setting P1 in the command line to 1:

```
$ @SYS$MANAGER:X86_XTOOLS$SYLOGIN 1


%X86_XTOOLS$SYLOGIN-I-IXTSETBEG, X86 VMS XTools setup starting

$ Define /NoLog XCC$COMPILER X86_XTOOLS$ROOT:[SYSEXE]XCC$COMPILER.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]XCC.CLD
$ CC == "XCC"

$ Define /NoLog BLISS32X X86_XTOOLS$ROOT:[SYSEXE]BLISS32X.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]BLISS_IN.CLD
$ BLISS == "Bliss /X32"

$ Define /NoLog BLISS64X X86_XTOOLS$ROOT:[SYSEXE]BLISS64X.EXE
$ BLISS64 == "Bliss /X64"

$ Define /NoLog MACRO X86_XTOOLS$ROOT:[SYSEXE]XMACRO.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]X86_MACRO.CLD

$ Define /NoLog ANALYZOBJ X86_XTOOLS$ROOT:[SYSEXE]X86_ANALYZOBJ.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]ANALYZE.CLD
$ Set Message X86_XTOOLS$ROOT:[SYSMSG]X86_FILMNTMSG.EXE

$ Define /NoLog IA64_LINK X86_XTOOLS$ROOT:[SYSEXE]X86_LINK.EXE
$ Define /NoLog IBUILD_CRFSHR X86_XTOOLS$ROOT:[SYSLIB]X86_CRFSHR.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]X86_LINK.CLD

$ Define /NoLog LIBRARIAN X86_XTOOLS$ROOT:[SYSEXE]X86_LIBRARIAN.EXE
$ Define /NoLog IBUILD_LBRSHR X86_XTOOLS$ROOT:[SYSLIB]X86_LBRSHR.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]LIBRARIAN.CLD

$ Define /NoLog MESSAGE X86_XTOOLS$ROOT:[SYSEXE]X86_MESSAGE.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]X86_MESSAGE.CLD

$ Define /NoLog LLVM_MC X86_XTOOLS$ROOT:[SYSEXE]LLVM-MC.EXE
$ LLVM_MC == "$LLVM_MC"

$ Define /NoLog F90$MAIN X86_XTOOLS$ROOT:[SYSEXE]F90$MAIN.EXE
$ Define /NoLog F90$MSG X86_XTOOLS$ROOT:[SYSMSG]F90$MSG.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]F90.CLD

$ Define /NoLog PASCAL X86_XTOOLS$ROOT:[SYSEXE]PASCAL.EXE
$ Define /NoLog PASCALER1 X86_XTOOLS$ROOT:[SYSMSG]PASCALER1.EXE
$ Define /NoLog PASCALER2 X86_XTOOLS$ROOT:[SYSMSG]PASCALER2.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]PASCAL.CLD


$ Define /NoLog COBOL X86_XTOOLS$ROOT:[SYSEXE]COBOL.EXE
$ Define /NoLog COBOL$MSG X86_XTOOLS$ROOT:[SYSMSG]COBOL$MSG.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]COBOL_CLD.CLD

$ Define /NoLog CDU X86_XTOOLS$ROOT:[SYSEXE]X86_CDU.EXE
$ Set Command X86_XTOOLS$ROOT:[SYSUPD]X86_SET.CLD
$ CLD == "Set Command"

$
%X86_XTOOLS$SYLOGIN-I-IXTSETDON, X86 VMS XTools setup done
```

6. Running the IVP

Enter the following command to display the results of the IVP, as shown in the example that follows:

```
$ DIRECTORY X86$IVP:; /SIZE /DATE /WIDTH=FILE=40

Directory X86_XTOOLS$ROOT:[SYS$IVP]

X86_XTOOLS$IVP.OLB;1                             278   8-APR-2021 22:14:03.59
X86_XTOOLS$IVP_BLISS-32.B32;1                      1   8-APR-2021 22:14:03.79
X86_XTOOLS$IVP_BLISS-32.EXE;1                     19   8-APR-2021 22:14:09.07
X86_XTOOLS$IVP_BLISS-32.LIS;1                      8   8-APR-2021 22:14:05.10
X86_XTOOLS$IVP_BLISS-32.MAP;1                     19   8-APR-2021 22:14:09.02
X86_XTOOLS$IVP_BLISS-32.OBJ;1                      8   8-APR-2021 22:14:05.28
X86_XTOOLS$IVP_BLISS-32.OBJ$ANALYZE;1              5   8-APR-2021 22:14:05.49
X86_XTOOLS$IVP_BLISS-64.B64;1                      1   8-APR-2021 22:14:03.86
X86_XTOOLS$IVP_BLISS-64.EXE;1                     19   8-APR-2021 22:14:09.33
X86_XTOOLS$IVP_BLISS-64.LIS;1                      8   8-APR-2021 22:14:05.66
X86_XTOOLS$IVP_BLISS-64.MAP;1                     19   8-APR-2021 22:14:09.27
X86_XTOOLS$IVP_BLISS-64.OBJ;1                      8   8-APR-2021 22:14:05.81
X86_XTOOLS$IVP_BLISS-64.OBJ$ANALYZE;1              5   8-APR-2021 22:14:06.01
X86_XTOOLS$IVP_CDU.CLD;1                           1   8-APR-2021 22:14:03.99
X86_XTOOLS$IVP_CDU.LIS;1                          22   8-APR-2021 22:14:06.59
X86_XTOOLS$IVP_CDU.OBJ;1                           2   8-APR-2021 22:14:06.68
X86_XTOOLS$IVP_CDU.OBJ$ANALYZE;1                  21   8-APR-2021 22:14:06.76
X86_XTOOLS$IVP_COBOL.COB;1                         1   8-APR-2021 22:14:04.18
X86_XTOOLS$IVP_COBOL.EXE;1                        21   8-APR-2021 22:14:10.09
X86_XTOOLS$IVP_COBOL.LIS;1                        16   8-APR-2021 22:14:07.57
X86_XTOOLS$IVP_COBOL.MAP;1                        21   8-APR-2021 22:14:10.04
X86_XTOOLS$IVP_COBOL.OBJ;1                        11   8-APR-2021 22:14:07.75
X86_XTOOLS$IVP_COBOL.OBJ$ANALYZE;1                 8   8-APR-2021 22:14:07.98
X86_XTOOLS$IVP_DECC.C;1                            1   8-APR-2021 22:14:03.72
X86_XTOOLS$IVP_DECC.EXE;1                         20   8-APR-2021 22:14:08.82
X86_XTOOLS$IVP_DECC.LIS;1                         16   8-APR-2021 22:14:04.33
X86_XTOOLS$IVP_DECC.MAP;1                         19   8-APR-2021 22:14:08.74
X86_XTOOLS$IVP_DECC.OBJ;1                         10   8-APR-2021 22:14:04.60
X86_XTOOLS$IVP_DECC.OBJ$ANALYZE;1                 13   8-APR-2021 22:14:04.85
X86_XTOOLS$IVP_F90.EXE;1                          20   8-APR-2021 22:14:09.84
X86_XTOOLS$IVP_F90.F90;1                           1   8-APR-2021 22:14:04.06
X86_XTOOLS$IVP_F90.LIS;1                          15   8-APR-2021 22:14:06.97
X86_XTOOLS$IVP_F90.MAP;1                          19   8-APR-2021 22:14:09.76
X86_XTOOLS$IVP_F90.OBJ;1                           9   8-APR-2021 22:14:07.13
X86_XTOOLS$IVP_F90.OBJ$ANALYZE;1                   9   8-APR-2021 22:14:07.37
X86_XTOOLS$IVP_PASCAL.EXE;1                       19   8-APR-2021 22:14:10.37
X86_XTOOLS$IVP_PASCAL.LIS;1                       17   8-APR-2021 22:14:08.16
X86_XTOOLS$IVP_PASCAL.MAP;1                       18   8-APR-2021 22:14:10.29
X86_XTOOLS$IVP_PASCAL.OBJ;1                        9   8-APR-2021 22:14:08.31
X86_XTOOLS$IVP_PASCAL.OBJ$ANALYZE;1                6   8-APR-2021 22:14:08.52
X86_XTOOLS$IVP_PASCAL.PAS;1                        1   8-APR-2021 22:14:04.12
X86_XTOOLS$IVP_XMACRO.EXE;1                       12   8-APR-2021 22:14:09.58
X86_XTOOLS$IVP_XMACRO.LIS;1                       17   8-APR-2021 22:14:06.23
X86_XTOOLS$IVP_XMACRO.MAP;1                       19   8-APR-2021 22:14:09.53
X86_XTOOLS$IVP_XMACRO.MAR;1                        1   8-APR-2021 22:14:03.92
X86_XTOOLS$IVP_XMACRO.OBJ;1                        5   8-APR-2021 22:14:06.31
X86_XTOOLS$IVP_XMACRO.OBJ$ANALYZE;1                8   8-APR-2021 22:14:06.44

Total of 47 files, 806 blocks.
$
```

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