

Open Guest Firmware Building

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This document describes how to obtain and build open guest firmware from source.

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1 Prerequisites

The following table gives a list of software tools required by the building.

	Software	Version	Link
1	mercurial	>= 0.9.3	http://www.selenic.com/mercurial/wiki/
2	tortoiseSVN Client	1.3.3	http://tortoisesvn.tigris.org/
3	gcc	>= 4.1.2	http://gcc.gnu.org
4	gnu binutils	>= 2.16.1	http://ftp.gnu.org/gnu/binutils
5	jrockit	>= 5.0	http://www.bea.com
6	ant-contrib	>= 1.0b2	http://ant.apache.org
7	xmlbeans	2.1.0	http://xmlbeans.apache.org
8	saxon	8.1.1	http://prdownloads.sourceforge.net/saxon/saxonb8-1-1.zip?download
Note:	Please be aware that XMLBeans of version 2.2.0 is NOT compatible with Saxon version 8.1.1		

2 Obtain the Source

2.1 Get EDK2 Source

EDK2, base of open guest firmware development, is an open source EFI implementation. A valid account is required by Tianocore project to download EDK2 source from website. Please register via <https://www.tianocore.org/> prior to downloading if you don't have an account yet. **2398** is the specific version required by firmware building. Using the following command to obtain EDK2 source of version 2398,

```
svn co -r 2398 https://edk2.tianocore.org/svn/edk2/trunk/edk2
```

2.2 Get Open GFW Source

The open guest firmware source tree can be obtained as a clone of Mercurial repository of open guest firmware project:

1. hg clone <http://xenbits.xensource.com/ext/efi-vfirmware.hg>.
2. hg co -C 38, where the 38 is the specified change set number.

3 Setup Build Environment

3.1 Install Software Tools

After completing installation of mercurial, svn client and compiler tools, please install the following tools in order:

```
jrocket > apache-ant > ant-contrib > xmlbeans > saxon
```

It's not necessary for you to export environment variables now for those tools, such as JAVA_HOME, etc. there will be a configuration script (depicted in section 4.4) to deal with those matters automatically.

3.2 Install Ant-Contrib & Saxon Libs

Please follow the steps to configure Ant_Contrib and Saxon8 libs for Jrocket JDK and XmlBeans tools respectively.

1. Unzip the ant-contrib-1.0b2-bin.zip file, and then copy the ant-contrib.jar file under lib directory of apache-ant, /path/to/apache-ant/lib.
2. Unzip the saxon8-1-1.zip file, and then copy saxon8.jar file under lib directory

of XmlBeans, /path/to/xmlbeans/lib.

3.3 Configure EDK2 Source Path

EDK2 source path can be configured by creating a symbolic link under the root path of open guest firmware source, /path/to/efi-vfirmware.hg:

```
ln -s /path/to/edk2 /path/to/efi-vfirmware.hg/edk2
```

3.4 Configure Environment Variables

The env.sh script file, located under /path/to/efi-vfirmware.hg/edk2-spare, is used to configure environment variables for building of guest firmware. Please modify the following code fragment in env.sh file by replacing the paths with actual values.

```
*****
export JAVA_HOME=/path/to/jrookit
export ANT_HOME=/path/to/apache-ant
export XMLBEANS_HOME=/path/to/xmlbeans
PATH=/usr/local/bin:/usr/bin:/bin:/usr/bin/X11:$ANT_HOME/bin:$XMLBEANS_HOME/bin
. ./edksetup.sh
*****
```

4 Build from Source

Once all above preparations are successfully done, it's time to start build the open guest firmware source by the following steps:

1. Go to /path/to/efi-vfirmware.hg, which is the root directory of open gfw source.
2. Run build.sh, to create source hierarchy.
 > sh build.sh
3. Go to edk2-xen subdirectory
 > cd edk2-xen
4. Run link.sh and then env.sh
 > . ./link.sh
 > . ./env.sh
5. Run build.
 > build
 If "permission denied" message prompts out, change the mode of build script file by "chmod u+x" can resolve this problem.
6. If every thing goes well, the binary file, named FV_RECOVERY.bin will be created and placed under,
 path/to/efi-vfirmware.hg/edk2-xen/Build/Xen/DEBUG_UNIXGCC/FV/FV_RECOVERY.bin

5 MISC

1. Since only Cirrus Logic GD VGA is currently supported by open guest firmware, please explicitly switch off the stdvga option in guest HVM configuration file,

`stdvga=0`

Or just leave it being commented out

`#stdvga=1`