在 VS2008 中调试 EDKII 编译工具

上一篇《编译 EDK2 工具的方法(C 语言部分)》介绍了如何编译这些工具,下面介绍一种在 VS2008 中调试的方法。以 volinfo.exe 为例,这是查看 *.FV 文件的工具,我们创建一个名为 voltest 的目录,然后将\BaseTools\Source\C\VolInfo 中的代码拷贝进去。

准备工作

- 1. 运行 EDK2 代码根目录下的 edksetup.bat
- 2. 进入 BaseTools 目录下运行 toolsetup.bat
- 3. 运行 NMake 即可全部重新编译一次
- 4. 进入 VolTest 目录,使用 NMake 确保能够正常编译

Visual Studio 2008 Command Prompt - 0 C:\edk2\BaseTools\Source\C\voltest>nmake Microsoft (R) Program Maintenance Utility Version 9.00.30729.01 Copyright (C) Microsoft Corporation. All rights reserved. cl.exe -c /nologo /c /Zi /Od /RTC1 /D _DEBUG /MTd /W4 /WX /D _CRT_SECUR E_NO_DEPRECATE /D _CRT_NONSTDC_NO_DEPRECATE /nologo /c /Zi /Od /RTC1 /D _DEBUG MTd /W4 /WX /D _CRT_SECURE_NO_DEPRECATE /D _CRT_NONSTDC_NO_DEPRECATE -I . -I C:\ edk2\BaseTools\Source\C\Include -I C:\edk2\BaseTools\Source\C\Include\Ia32 -I C: Nedk2\BaseTools\Source\C\Common -I . -I C:\edk2\BaseTools\Source\C\Include -I C: \edk2\BaseTools\Source\C\Include\Ia32 -I C:\edk2\BaseTools\Source\C\Common Voll nfo.c -FoVolInfo.obj VolInfo.c link.exe /nologo /debug /incremental:no /nodefaultlib:libc.lib /out:C:\e dk2\BaseTools\Bin\Win32\VolInfo.exe C:\edk2\BaseTools\Lib\Win32\Common.lib VolIn fo.obj

C:\edk2\BaseTools\Source\C\voltest}_

下面介绍如何分析和重新创建工程

1. 使用 nmake >> 1.txt 将上述结果输出到 1.txt 中 (如果 1.txt 内容为空,那么 需要用编辑器打开一次 volinfo.c 再保存一下,重新执行上面的命令,这样做相当 于 Touch 一次 Source Code,强迫重新生成)

🕶 Visual Studio 2008 Command Prompt	<u>- 🗆 ×</u>	est		- 🗆 🗙	
C:\edk2\BaseTools\Source\C\voltest>nmake > 1.txt	-	[) 帮助(出)			
Microsoft (R) Program Maintenance Utility Version 9.00.30729.01 Copyright (C) Microsoft Corporation. All rights reserved.		∷ ▼ st		▼ 🌗 转到	
C:\edk2\BaseTools\Source\C\voltest>nmake > 1.txt		tat 文本文档 KB	Makefile 文件 1 KB		
Microsoft (R) Program Maintenance Utility Version 9.00.30729.01 Copyright (C) Microsoft Corporation. All rights reserved.		c 90.pdb rogram Debug Da 8 KB	C VolInfo. c C Source 45 KB		
C: \edk2\BaseTools\Source\C\voltest>		olInfo.h /C++ Header	VolInfo. obj		
▶ 1.txt - 记事本					- 🗆 🗙
文件 (图)编辑 (图)格式(图) 查看(例) 帮助(图)					
cl.exe -c /nologo /c /Zi /Od /RTC1 /D _DEBUG /MTd /W4 /WX /D _CRT_ VolInfo.c Jink exe /nologo /dobug /incrementaling /nodefaultlibilibc lib /out	SECURE_	NO_DEPRECATE /D	_CRT_NONSTDC_NO	DEPRECATE /r	1010go 🔺

2. 打开 Vs2008,从 New → Project From Existing Code 创建一个新的工程,按照下面设置之后直接 Finish 导入即可

Create New Project from Existing Code Files	? 🗙
Specify Project Location and Source Files You can choose the files from one or more folders.	
Project file <u>l</u> ocation:	
C:\edk2\BaseTools\Source\C\voltest	Br <u>o</u> wse
Project name:	
volinfo	
\checkmark Add files to the project from <u>these</u> folders	
Folders:	
Add subfol Folder C:\edk2\BaseTools\Source\C\voltest	<u>A</u> dd
-	Remove
File types to add to the project:	
. cpp (. cxx (*. cc)*. c)*. inl (*. h)*. hpp (*. hxx (*. hm)*. inc)*. rc)*.	
$\overline{\checkmark}$ Show all files in Solution Explorer	
< Previous Nex	t > <u>F</u> inish Cancel

3. 在 Project→Properties 中调整属性,调整的目标是 C/C++ 的 Command Line 和 Linker 的 Command Line 中的内容和我们上面 1.txt 中 cl.exe 的内容相同(或者类 似)

volinfo Property Pages		?	×
Configuration: Active (Debug)	Platform: Active(Win32)	Configuration Manager	
Common Properties General General General General Optimization Preprocessor Code Generation Language Precompiled Headers Output Files Browse Information Reveal General Input Manifest File Debugging	All options: /Od /D "WIN32" /D "_DEBUG" /D "_WINDOWS" /G /Fd"Debug\vc90.pdb" /W3 /nologo /c /Wp64 /Z	n /EHsc /RTC1 /MDd /Fo"Debug\\" I /TF /errorReport:prompt	-
	A <u>d</u> ditional options:	2	-
	1	· · · · · · · · · · · · · · · · · · ·	

4. 下面就是为了完成这个目标所进行的设置,仅供参考,最关键的是要保证 Command Line 和前面的那个能够完成编译的批处理内容尽可能接近

volinfo Property Pages		? ×
Configuration: Active (Debug)	▼ <u>P</u> latform: Active(Win32)	Configuration Manager
Common Properties Configuration Properties Ceneral Debugging C/C++ General Optimization Preprocessor C code Generation Language	 □ General Output Directory Intermediate Directory Extensions to Delete on Clean Build Log File Inherited Project Property Sheets Enable Managed Incremental Build □ Project Defaults 	Debug Debug *. obj;*.ilk;*.tlb;*.tli;*.tlh;*.tmp;*.rsp;*.pgc;* \$(IntDir)\BuildLog.htm Yes
 Freecompiled Headers Output Files Browse Information Advanced Command Line Linker Manifest Tool XML Document Generator Browse Information Build Events Custom Build Step 	Use of MFC Use of MFC Character Set Common Language Runtime support Whole Program Optimization	Use MFC in a Static Library Not Osing AL Not Set No Common Language Runtime support No Whole Program Optimization
	Output Directory Specifies a relative path to the out variables.	put file directory; can include environment 确定 取消 应用(A)

volinfo Property Pages		? ×
Configuration: Active (Debug)	Platform: Active(Win32)	Configuration Manager
+ Common Properties	Additional Include Directories	
Configuration Properties	Resolve #using References	
General	Debug Information Format	Program Database for Edit & Continue (/ZI)
Debugging	Suppress Startup Banner	Yes (/nologo)
General	Warning Level	Level 3 (/¶3)
Optimization	Detect 64-bit Portability Issues	No 🗸
Preprocessor	lreat Warnings AS Errors	NO
Longuege	Use UNICODE Response Files	Yes
D		

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Configuration: Active (Debug)	Platform: Active(Win32) Configuration Manager
Common Properties Configuration Properties General Debugging C/C++ Consumal	Preprocessor Definitions DEBUG:_CRT_SECURE_NO_DEPRECATE:_CRT_HONST Ignore Standard Include Path No Generate Preprocessed File No Keep Comments No
- Other al - Other al - Treprocessor - Code Generation - Language	<mark>▶ go. bat - 记事本 - □ ×</mark> 文件(1) 編偈(2) 格式(1) 查看(1) 帮助(3)
- Precompiled Headers - Output Files - Browse Information - Advanced - Command Line	CRT_SECURE_NO_DEPRECATE /D_CRT_NONSTDC_NO_DEPRECATE /nologo /c /Zi /Od /RTC1 /D_DEBUG /MIG /W4 /WA /D_CKT_SECURE_NO_DEPRECATE /D_CRT_NONSTDC_NO_DEPRECATE -II C:\edk2 \BaseTools\Source\C\Include -I C:\edk2\BaseTools\Source\C\Include\Ia32 -I C:\edk2 \BaseTools\Source\C\Include -I C:\edk2\BaseTools\Source\C\Include -I C:\edk2
 Hinker Manifest Tool XML Document Generator Browse Information Build Events 	<pre>\BaseTools\Source\C\Include\Ia32 -I C:\euk2\BaseTools\Source\C\Common VolInfo.c - FoVolInfo.bbj link.exe /nologo /debug /incremental:no /nodefaultlib:libc.lib /out:VolInfo.exe C:\euk2\BaseTools\Lib\Win32\Common.lib VolInfo.obj</pre>

olinfo Property Pages		? 🗙
Configuration: Active(Debug)	▼ <u>P</u> latform: Active(Win32)	Configuration Manager
🛨 Common Properties	Calling Convention	cdecl (/Gd)
E Configuration Properties	Compile As	Compile as C++ Code (/TP)
General	Distance of the state	
Debugging	Force Includes	FoVolInfo. obj
General	Force wusing	
Optimization	Show Includes	No
Preprocessor	Undefine Preprocessor Definitions	
Code Generation	Undefine All Preprocessor Definition	No
- Language Procompiled Meeders	Use Full Paths	No
-Output Files	Omit Default Library Names	No
Browse Information	Error Reporting	Prompt Immediately (/errorReport:prompt)
Advanced		
Command Line		
H-Linker		
To XML Document Generator		
+ Browse Information		
🗄 Build Events		
🕂 Custom Build Step		

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ŀ	volinfo Property Pages		? ×	
	Configuration: Active (Debug)	<u>P</u> latform: Active(Win32)	Configuration Manager	
	⊕ Common Properties	Enable String Pooling	No	
1	Configuration Properties	Enable Minimal Rebuild	No	
1	- General	Enable C++ Exceptions	No	
,	El C/C++	S lifer type check	NO	
а	General	Basic Runtime Checks	<pre><inherit defaults="" from="" or="" parent="" project=""></inherit></pre>	
:	Optimization	Runtime Library	<pre><inherit defaults="" from="" or="" parent="" project=""></inherit></pre>	
•	Preprocessor	Struct Member Alignment	Default	
•	Longuage	Buffer Security Check	Yes	
)	Precompiled Headers	Enable Function-Level Linking	No	
	Output Files	Enable Enhanced Instruction Set	Not Set	
	Browse Information	Floating Point Model	Precise (/fp:precise)	
	Advanced	Enable Floating Point Exceptions	No	
	Command Line			

	? X * *********************************
Configuration: Active @ebug) ☐ Common Properties ☐ Configuration Properties — General — Debugging	Platform: Active(Win32) Configuration Manager Additional Include Directories C:\edk2\BaseTools\Source\C\Include:C:\edk2 Fogras Database for Edit & Continue (/ZI)
⊖-C/C++	Suppress Startup Banner Yes (nologo)
General	Warning Level 3 (/W3)
- Optimization - Preprocessor	D go. bat - 记事本 _ 🗆 🗙
Code Generation	文件 (E) 编辑 (E) 格式 (D) 查看 (V) 帮助 (E)
Language - Frecompiled Meaders - Output Files - Browse Information - Advanced - Command Line Munifest Tool Munifest Tool Mun Document Generator	cl.exe -c /nologo /c /Zi /Od /RTC1 /D _DEBUG /MTd /W4 /WX /D _CRT_SECURE NO_DEPRECATE /D _CRT_NONSTDC NO_DEPRECATE /nologo /c /Zi /Od /RTC1 /D _DEBUG /MTd /W4 /WX /D _CRT_SECURE ND_DEPRECATE /D _CRT_NONSTDC ND_DEPRECATE -II C:\edk2 VBaseTools\Source\C\Include -I C:\edk2\BaseTools\Source\C\Include -I C:\edk2 \BaseTools\Source\C\Common -II C:\edk2\BaseTools\Source\C\Include -I C:\edk2 \BaseTools\Source\C\Include\Ia32 -I C:\edk2\BaseTools\Source\C\Common VolInfo.c - E000Info.obj link_exe_(nologo /debug /incremental:no_/ondefaultlib:libc.lib /out:WolInfo.exe
⊕ Browse Information ⊕ Build Events	C:\edk2\BaseTools\Lib\Win32\Common.lib VolInfo.obj

volinfo Property Pages		? ×
Configuration: Active (Debug)	▼ Platform: Active(Win32)	Configuration Manager
🕀 Common Properties	Additional Dependencies	C:\edk2\BaseTools\Lib\Win32\Common.lib
Configuration Properties	Ignore All Default Libraries	No
General	Ignore Specific Library	libc.lib
Debugging	Module Definition File	
- Linker	Add Module to Assembly	
General	Embed Managed Resource File	
Input	Force Symbol References	
Manifest File	Delay Loaded DLLs	\$ (NOINHERIT)
	Assembly Link Resource	
Ontimization		

Configuration: Active (Debug) Platform: Activ	e (Win32) Configuration Manager
Entry Point	
 Comming uration Properties General Debugging C/C++ Linker General Input Manifest File Optimization System Optimization Embedded IDL Advanced Command Line Manifest Tool XML Document Generator Browse Information Build Events Custom Build Step CLR Unmanaged Code Ch 	No No No Default Default No

5. 我们分别比较一下 Command Line 中和 1.txt 内容,可以看出大部分的内容都调整 为相同的

					? ×		
	• Platform:	Active (Win32)	•	Configuration Manager.			
1	options:						
/0d \Bs ″_D /Fo	l /I "C:\edk2\B seTools\Source EBUG" /D "_CRT "Debug\\" /Fd"	BaseTools\Source\C\Ir e\C\Include\Ia32"/I r_SECURE_NO_DEPRECATH "Debug\vc90.pdb"/W3	clude" /I "C:\edk2 "c:\edk2\BaseTools\Soun " /D "_CRT_NOMSTDC_NO_I /nologo /c /ZI /TP /err	ce\C\Common″/D BPRECATE″/FD/MT orReport:prompt			
) 1.txt - j	记事本					- 🗆 🗙
Ĵ	て件(正) 编辑(正	() 格式(Q) 查看(V)	帮助(近)				
 / 	cl.e CRT_SECURE_ MTd /W4 /W3 BaseTools\S BaseTools\S BaseTools\S OVolInfo.ob link :\edk2\Base	exe -c /nologo _NO_DEPRECATE /I X /D _CRT_SECURI Source\C\Include Source\C\Common Source\C\Include bj k.exe /nologo /e eTools\Lib\Win32	/c /Zi /Od /RTC1) _CRT_NONSIDC_NO _NO_DEPRECATE /D -I C:\edk2\Base1 -II C:\edk2\B e\la32 -I C:\edk2\ debug /incrementa3 2\Common.lib Volir	/D _DEBUG /MTd /WJ DEPRECATE /nologo _CRT_NONSTDC_NO_DI 'ools\Source\C\Inc: aseTools\Source\C' .BaseTools\Source\C .no /nodefaultlib .fo.obj	4 /WX /D /c /Zi /Oc EPRECATE -] lude\Ia32 - \Include -] C\Common U :libc.lib /	/RTC1 /D _DEBUG I C:\edk2 C:\edk2 C:\edk2 olInfo.c - Yout:VolInfo.exe	Ă

All options: /OUT:"Debug\volinfo.exe" /INCREMENTAL /NOLOGO /MANIFEST:NO /NODEFAULTLIB:"libc.lib" /DEBUG /PDB:"c:\edk2\BaseTools\Source\C\voltest\Debug\volinfo.pdb" C:\edk2 \BaseTools\Lib\Win32\Common.lib		
▶ 1.txt - 记事本		
文件 (2) 编辑 (2) 格式 (2) 查看 (2) 帮助 (1)		
cl.exe -c /nologo /c /Zi /Od /RTC1 /D _DEBUG /MTd /W4 /WX /D _CRT_SECURE_NO_DEPRECATE /D _CRT_NONSTDC_NO_DEPRECATE /nologo /c /Zi /Od /RTC1 /D _DEBUG /MTd /W4 /WX /D _CRT_SECURE_NO_DEPRECATE /D _CRT_NONSTDC_NO_DEPRECATE -II C:\edk2 \BaseTools\Source\C\Include -I C:\edk2\BaseTools\Source\C\Include\Ia32 -I C:\edk2 \BaseTools\Source\C\Common -II C:\edk2\BaseTools\Source\C\Include -I C:\edk2 \BaseTools\Source\C\Include\Ia32 -I C:\edk2\BaseTools\Source\C\Include -I C:\edk2 \BaseTools\Source\C\Include\Ia32 -I C:\edk2\BaseTools\Source\C\Common VOIInfo.c - FoVoIInfo.obj link.exe /nologo /debug /incremental:no /nodefaultlib:libc.lib /out:VoIInfo.exe C:\edk2\BaseTools\Lib\Win32\Common.lib VoIInfo.obj		

6.设置 Debug 时传递给程序 z.rom 作为参数(前提也是将这个文件放到目录下)。

volinfo Property Pages			? ×
volinfo Property Pages Configuration: Active (Debug) Common Properties Configuration Properties General Debugging C/C++ Linker Manifest Tool XML Document Generator Browse Information Duild Events	Platform: Active (Win3 Debugger to launch: Local Windows Debugger Command Arguments Working prectory Attach Debugger Type Environment	32)	Configuration Manager
H-Custom Build Step	Merge Environment	Yes	

7.测试能够正常编译,此时就可以直接在 VC 环境中进行调试,可以很方便的设置断点, 查看变量值等等。

🔄 volinfo (Debugging) - Visual C++ 2008 Express Edition	- 🗆 ×
File Edit View Project Build Debug Tools Mindow Help	
i 🗊 - 🛅 - 🚰 🛃 🥔 👗 🛍 🛝 🔊 - (* - 💭 - 10,) > Debug - Vin32 - 👘 📸 nain	- 💀 🐨 🕸 🎌 🔜 🗆 - 🖕
🕩 II 👜 🔟 🎐 भी (月 19) Hax 🖘 马 🖕 (司 18) 💁 🖕 An 清 清 三 19 田 🖓 அ அ 권 🔗 🐼	-
Process: [1908] volinfo.exe 🔹 Thread: [1912] Main Thread 🔹 👻 🐺 Stack Frame: volinfo.exe!main(int arg =	-
Solution Explore U X Disassenbly Vollafo. c	🕰 c:\edk2\BaseTools\Source\C\VolInfo\Debug\volinfo.exe 🛛 🗙 🗙
Molmown Scope Molmown	VolInfo Tiano Firmware Volume FFS image info. Version 0.82 Build 2524, Jul 23 2 🔹 🗸
Debug D	
SetUlityHene (UTLITy JUME): /// Triat utility header // Triat utility header // Triat utility header // Utliafs.ab; // Ut	
Solutio Mytlass view	
Autos 🗸 4 X	Breakpoints 🗸 4 🗙
Rane Yalue Type	Nev • 🗙 😓 👼 🛃 Columns •
F arry 0x0038360 cba***	Hame Condition Hit Count
	VolInfo.c, line 186 (no condit break always (currently 0)
	VOLINTO. C, IINE IVI INO CONDIT break always (currently 1)
🔐 Autos 🛒 Locals 🕟 Hodules 🌠 Watch 1	Call Stack Breakpoints Output
Ready	La 186 Col 1 Ch 1 IMS //

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