PDFPreview

Purpose

This project use mupdf library to generate preview and printout of pdf documents.

The reason for this is I need to port my old application to Linux and I use external Sumatra pdf viewer for preview and printing of pdf documents. Sumatra does not exists on linux, so...

Also sumatra use libmupdf 1.6 and I want 1.8.

The purpose of the document is to explain how to build libmupdf.dll (32 and 64 bit) for windows and Linux, how to link it in FPC (lazarus or codetyphon) application.

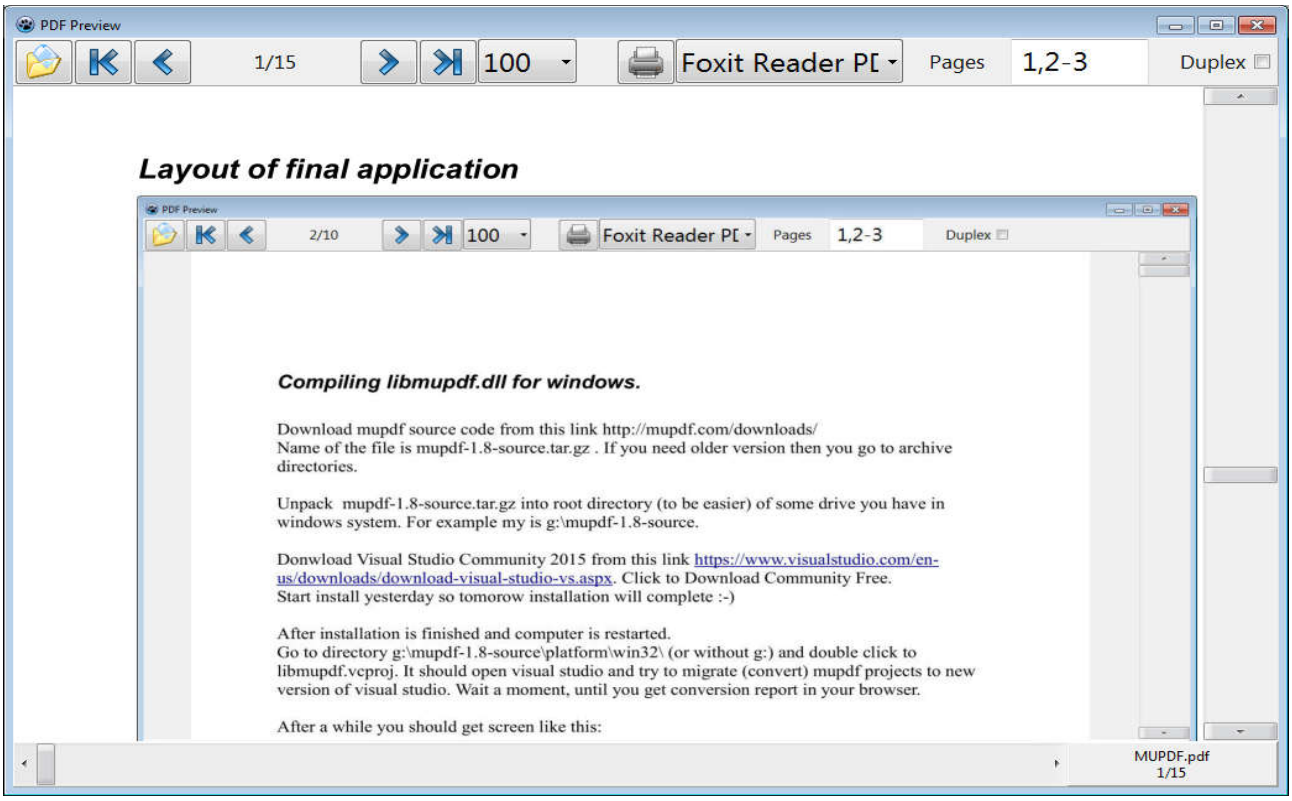
Example project show the use of library with common preview functions. You are encourage to extend this project.

Initial idea for this FPC project is done by Blestan Tabakov. His version use one of first version of libmupdf library.

Problems:

There are lot of changes in cdecl function calls between versions. Big change is between version 1.6 and 1.7. Almost every call in version 1.7 is changed in way that first param is CONTEXT variable. Some functions are changed in way that they have different params or param types.

Layout of final application



Layout of final application

Compiling libmupdf.dll for windows.

Download mupdf source code from this link http://mupdf.com/downloads/
Name of the file is mupdf-1.8-source.tar.gz . If you need older version then you go to archive directories.

Unpack mupdf-1.8-source.tar.gz into root directory (to be easier) of some drive you have in windows system. For example my is g:\mupdf-1.8-source.

Donwload Visual Studio Community 2015 from this link https://www.visualstudio.com/en-us/downloads/download-visual-studio-vs.aspx. Click to Download Community Free.
Start install yesterday so tomorow installation will complete :-)

After installation is finished and computer is restarted.
Go to directory g:\mupdf-1.8-source\platform\win32\ (or without g:) and double click to libmupdf.vcproj. It should open visual studio and try to migrate (convert) mupdf projects to new version of visual studio. Wait a moment, until you get conversion report in your browser.

After a while you should get screen like this:

History

My first approach was to use ver 1.6 of libmudpf. I did not found any precompiled version of it. According to Blestan, Sumatra project always have libmudpf.dll if you use installer and install sumatra. So I did, but guys from Sumatra did not export all function needed by Blestan example. So it was dead end for me. Then I used Sumatra source code and recompile libmupdf.dll but included missing function. This was good. Then I tried to precomile for Linux. But Fedora19 did not have 1.6 and latest version was 1.5. So I decided to go again from start. Use plain mupdf source (latest was 1.8) and recompile for win32 and win64. Almost all calls are changed between 1.6 and 1.8. Some of the functions are renamed.

Compiling libmupdf.dll for windows (Dynamic Library - dll)

Download mupdf source code from this link http://mupdf.com/downloads/
Name of the file is mupdf-1.8-source.tar.gz . If you need older version then you go to archive directories.

Unpack mupdf-1.8-source.tar.gz into root directory (to be easier) of some drive you have in windows system. For example my is g:\mupdf-1.8-source.

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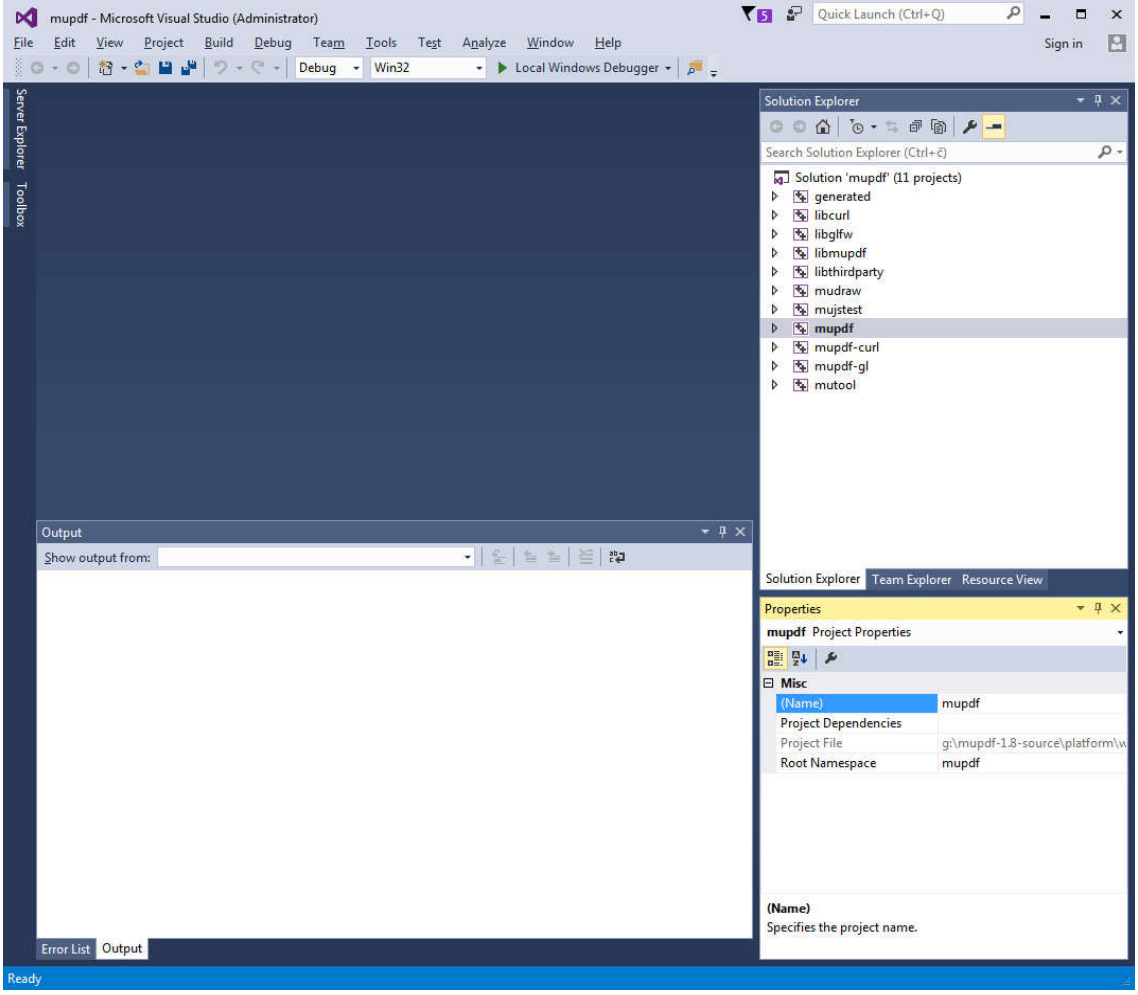
Start install yesterday so tomorow installation will complete :-)

After installation is finished and computer is restarted.
Go to directory g:\mupdf-1.8-source\platform\win32\ (or without g:) and double click to libmupdf.vcproj. It should open visual studio and try to migrate (convert) mupdf projects to new version of visual studio. Wait a moment, until you get conversion report in your browser.

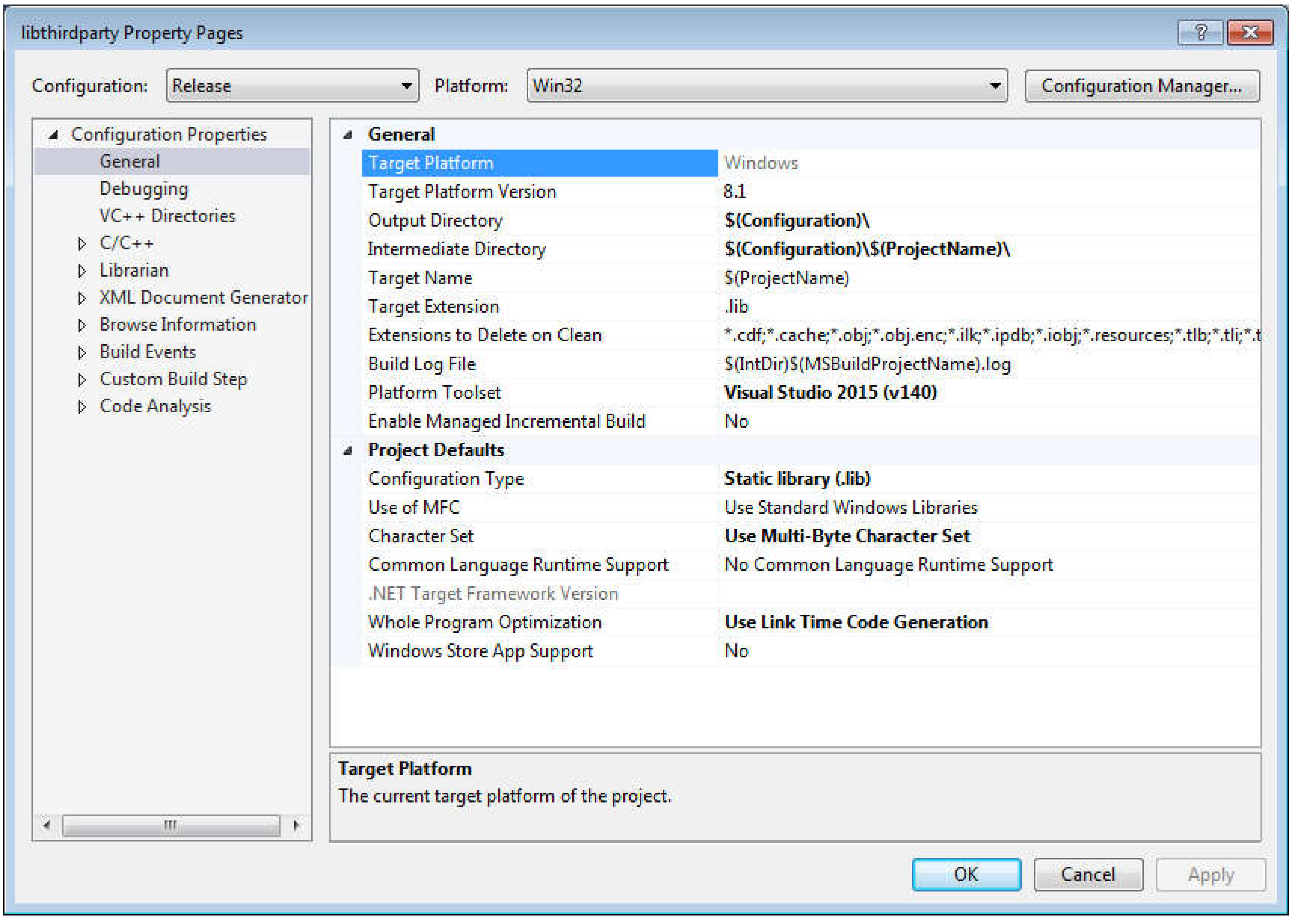
After a while you should get screen like this:



(Name)	mupdf
Project Dependencies	
Project File	g:\mupdf-1.8-source\platform\w
Root Namespace	mupdf

(Name)
Specifies the project name.

Right click to libmupdf third party and chose properties, after that choose Configuration Manager.

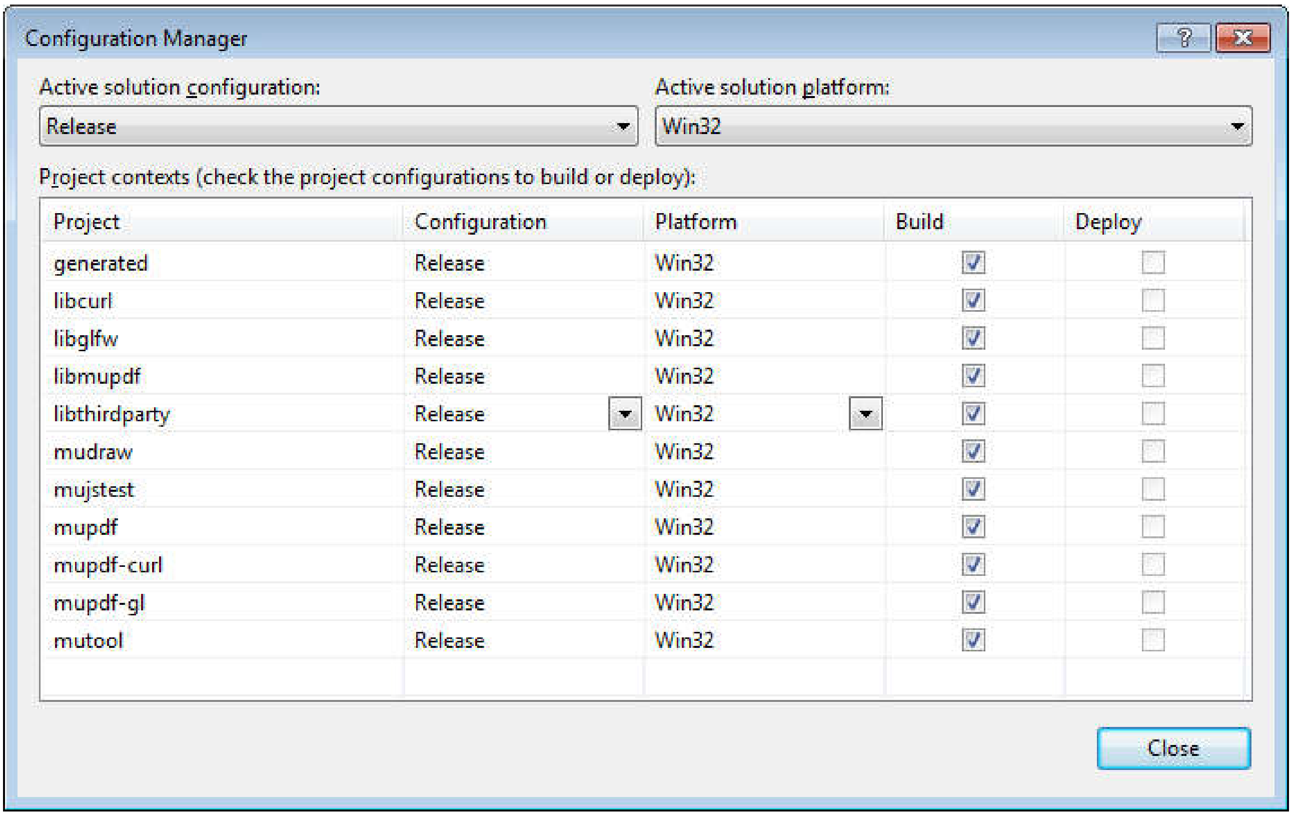


libthirdparty Property Pages

Configuration: Release Platform: Win32

General	
Target Platform	Windows
Target Platform Version	8.1
Output Directory	**$(Configuration)**
Intermediate Directory	**$(Configuration)\\$(ProjectName)**
Target Name	$(ProjectName)
Target Extension	.lib
Extensions to Delete on Clean	*.cdf;*.cache;*.obj;*.obj.enc;*.ilk;*.ipdb;*.iobj;*.resources;*.tlb;*.tli;*.t
Build Log File	$(IntDir)$(MSBuildProjectName).log
Platform Toolset	**Visual Studio 2015 (v140)**
Enable Managed Incremental Build	No
Project Defaults	
Configuration Type	**Static library (.lib)**
Use of MFC	Use Standard Windows Libraries
Character Set	**Use Multi-Byte Character Set**
Common Language Runtime Support	No Common Language Runtime Support
.NET Target Framework Version	
Whole Program Optimization	**Use Link Time Code Generation**
Windows Store App Support	No

Target Platform
The current target platform of the project.



Configuration Manager

Active solution configuration: Release

Active solution platform: Win32

Project contexts (check the project configurations to build or deploy):

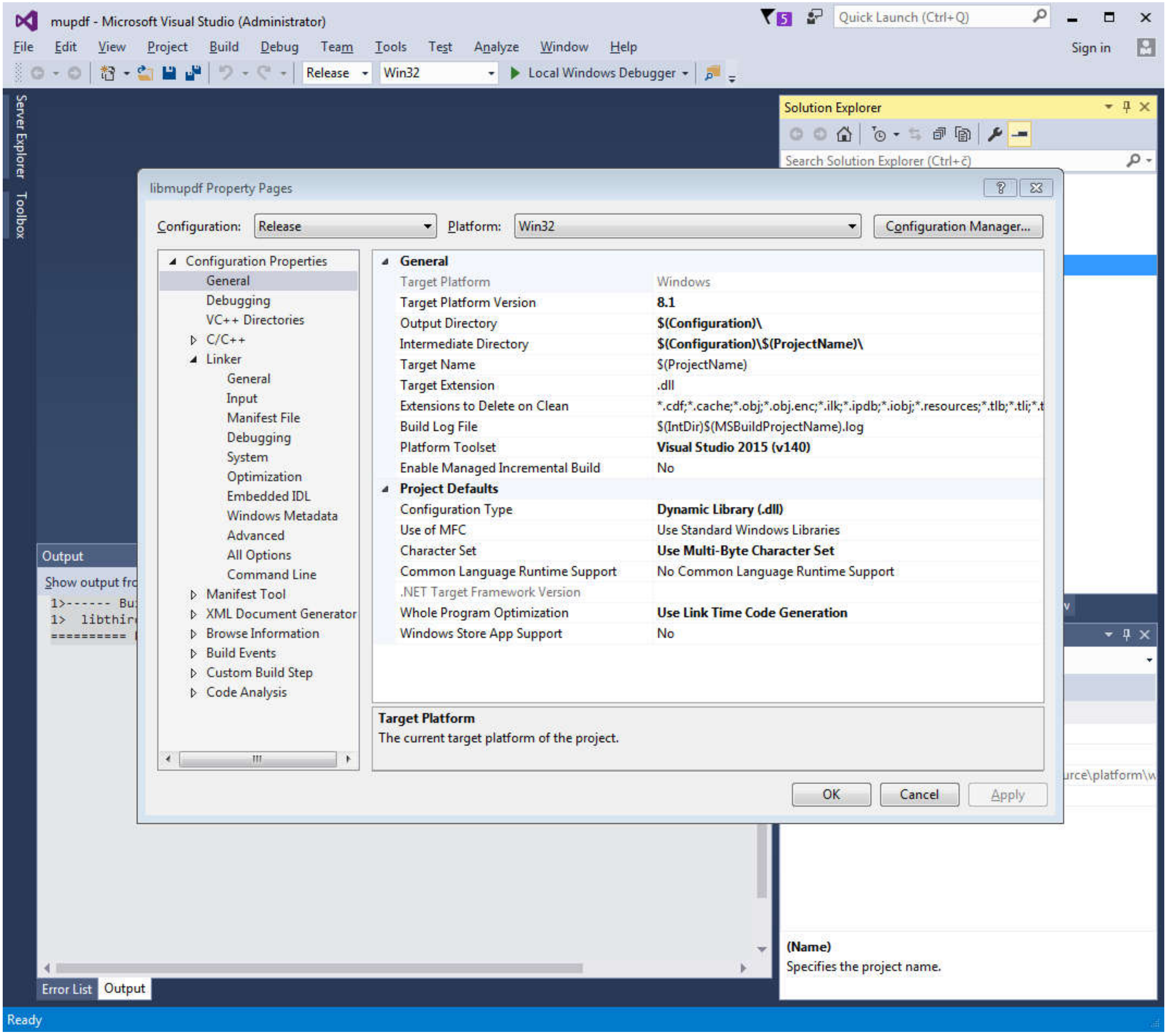
Project	Configuration	Platform	Build	Deploy
generated	Release	Win32	☑	□
libcurl	Release	Win32	☑	□
libglfw	Release	Win32	☑	□
libmupdf	Release	Win32	☑	□
libthirdparty	Release	Win32	☑	□
mudraw	Release	Win32	☑	□
mujstest	Release	Win32	☑	□
mupdf	Release	Win32	☑	□
mupdf-curl	Release	Win32	☑	□
mupdf-gl	Release	Win32	☑	□
mutool	Release	Win32	☑	□

Chose Acive Soultion = Release (original is Debug)
Close both windows, right click again to libthirdparty and choose Build. Wait until this lib is built, and you get message like this

```
1>------ Build started: Project: libthirdparty, Configuration: Release Win32 ------
1>  libthirdparty.vcxproj -> g:\mupdf-1.8-source\platform\win32\Release\libthirdparty.lib
========== Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
```

So, first lib is created and it is located in
g:\mupdf-1.8\source\platform\win32\Release\libthirdparty.lib

Now me must make libmupdf.dll.
Right Click to libmupdf and chose Properties. This library depends on libthirdparty.lib so we have to make a link to it. But first we need to change project configuration type to dll.



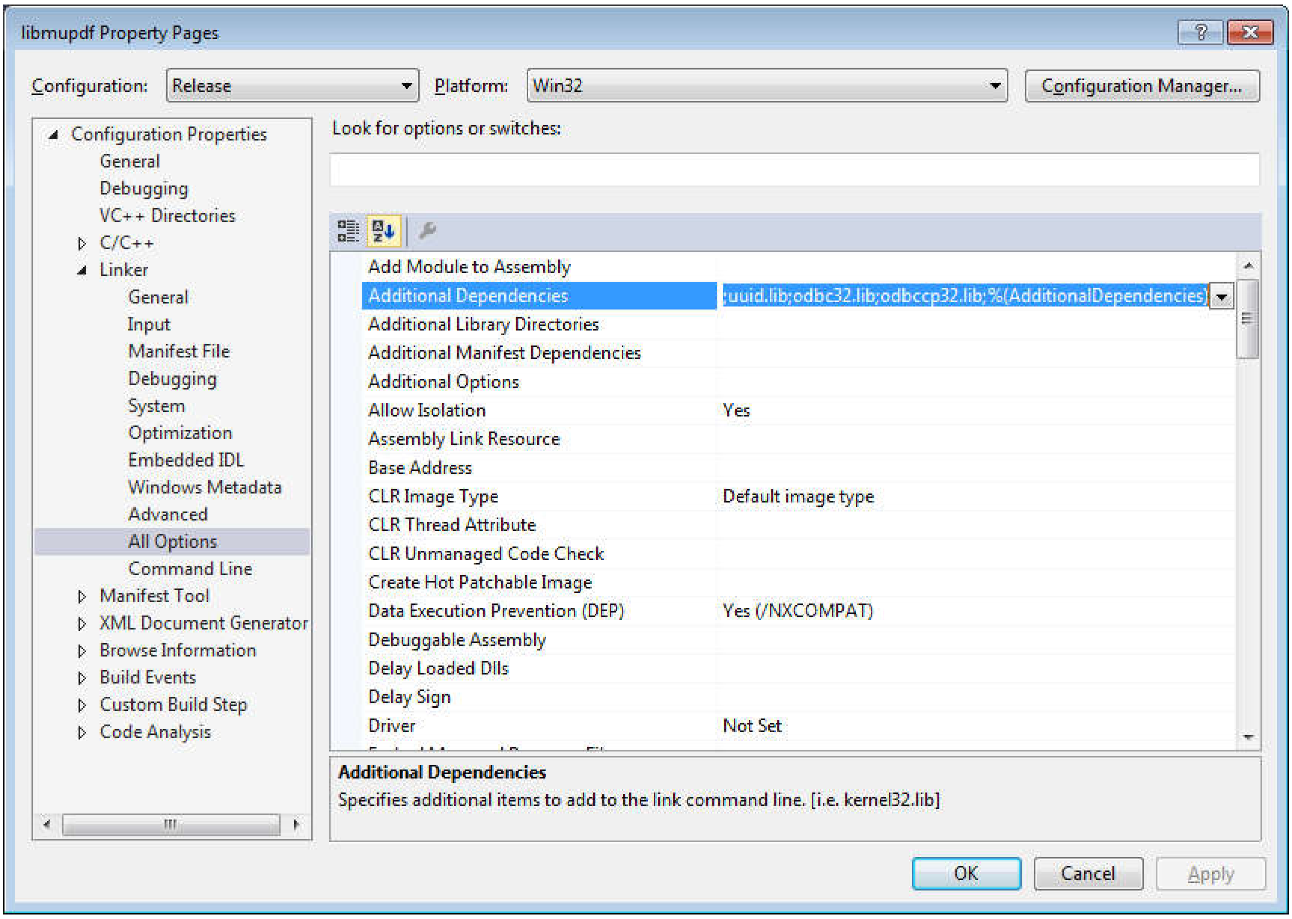
Configuration: Release
Platform: Win32

General	
Target Platform	Windows
Target Platform Version	8.1
Output Directory	$(Configuration)\
Intermediate Directory	$(Configuration)\$(ProjectName)\
Target Name	$(ProjectName)
Target Extension	.dll
Extensions to Delete on Clean	*.cdf;*.cache;*.obj;*.obj.enc;*.ilk;*.ipdb;*.iobj;*.resources;*.tlb;*.tli;*.t
Build Log File	$(IntDir)$(MSBuildProjectName).log
Platform Toolset	Visual Studio 2015 (v140)
Enable Managed Incremental Build	No
Project Defaults	
Configuration Type	Dynamic Library (.dll)
Use of MFC	Use Standard Windows Libraries
Character Set	Use Multi-Byte Character Set
Common Language Runtime Support	No Common Language Runtime Support
.NET Target Framework Version	
Whole Program Optimization	Use Link Time Code Generation
Windows Store App Support	No

Target Platform
The current target platform of the project.

(Name)
Specifies the project name.

After that open Linker options:



Configuration: Release

Platform: Win32

Add Module to Assembly	
Additional Dependencies	uuid.lib;odbc32.lib;odbccp32.lib;%(AdditionalDependencies)
Additional Library Directories	
Additional Manifest Dependencies	
Additional Options	
Allow Isolation	Yes
Assembly Link Resource	
Base Address	
CLR Image Type	Default image type
CLR Thread Attribute	
CLR Unmanaged Code Check	
Create Hot Patchable Image	
Data Execution Prevention (DEP)	Yes (/NXCOMPAT)
Debuggable Assembly	
Delay Loaded Dlls	
Delay Sign	
Driver	Not Set

Additional Dependencies

Specifies additional items to add to the link command line. [i.e. kernel32.lib]

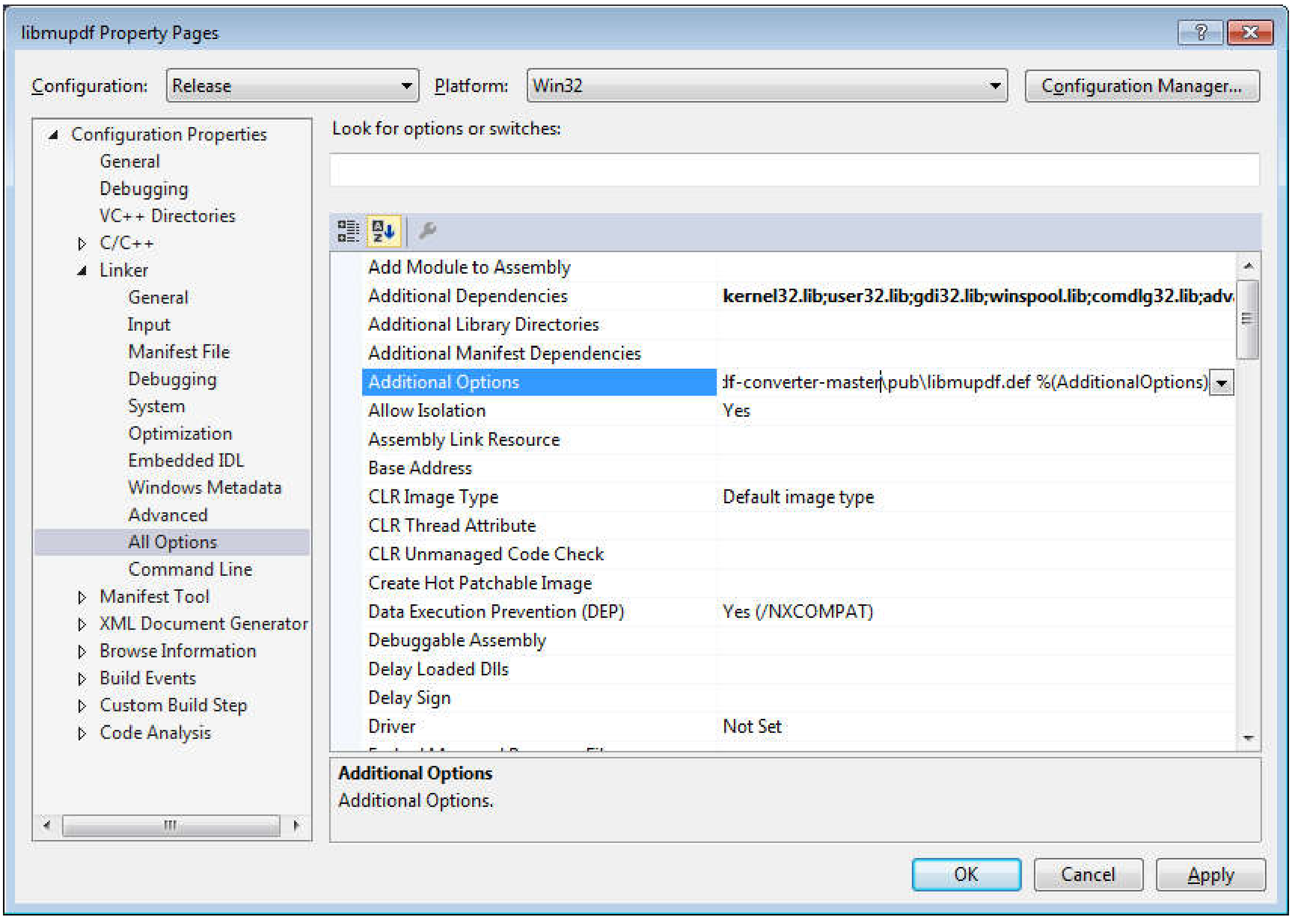
Add new library into Additional Dependencies so the value look like:

kernel32.lib;user32.lib;gdi32.lib;winspool.lib;comdlg32.lib;advapi32.lib;shell32.lib;ole32.lib;oleaut32.lib;uuid.lib;odbc32.lib;odbccp32.lib;**g:\mupdf-1.8-source\platform\win32\Release\libthirdparty.lib;**%(AdditionalDependencies)

Now we need list of function which dll have to export and that are needed for our project.
File is /DEF:**g:\mupdf-1.8-source\libmupdf.def** %(AdditionalOptions)
Only functions that are listed here will be visible in libmupdf.dll by some other consumer program.
Example of libmupdf.def file:

```
; Fitz exports

	fz_new_context_imp
	pdf_document_handler
```



libmupdf Property Pages

Configuration: Release

Platform: Win32

Look for options or switches:

Add Module to Assembly	
Additional Dependencies	**kernel32.lib;user32.lib;gdi32.lib;winspool.lib;comdlg32.lib;adv**
Additional Library Directories	
Additional Manifest Dependencies	
Additional Options	df-converter-master\pub\libmupdf.def %(AdditionalOptions)
Allow Isolation	Yes
Assembly Link Resource	
Base Address	
CLR Image Type	Default image type
CLR Thread Attribute	
CLR Unmanaged Code Check	
Create Hot Patchable Image	
Data Execution Prevention (DEP)	Yes (/NXCOMPAT)
Debuggable Assembly	
Delay Loaded Dlls	
Delay Sign	
Driver	Not Set

Additional Options
Additional Options.

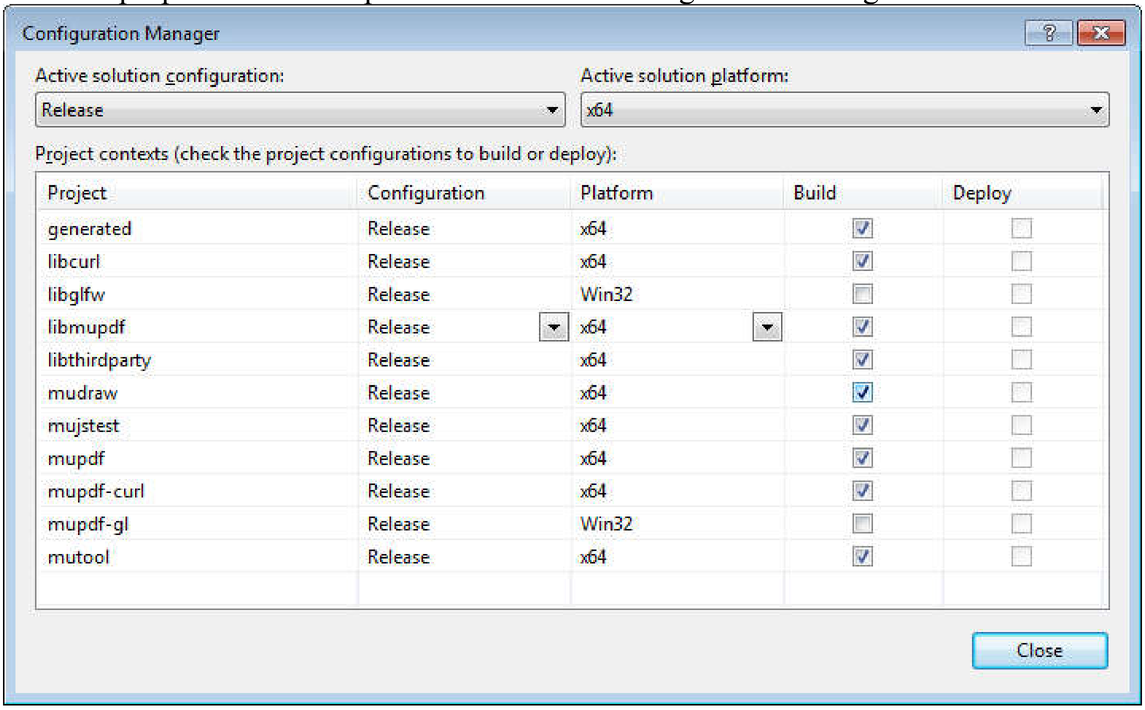
Close all other windows, right click to libmupdf and choose Build.
Afer some time you should see something like this:

```
2>  Generating Code...
2>     Creating library Release\libmupdf.lib and object Release\libmupdf.exp
2>  Generating code
2>  All 2655 functions were compiled because no usable IPDB/IOBJ from previous compilation
was found.
2>  Finished generating code
2>  libmupdf.vcxproj -> g:\mupdf-1.8-source\platform\win32\Release\libmupdf.dll
2>  libmupdf.vcxproj -> Release\libmupdf.pdb (Full PDB)
========== Build: 2 succeeded, 0 failed, 0 up-to-date, 0 skipped ==========
```

The final file is located in g:\mupdf-1.8-source\platform\win32\Release\libmupdf.dll
Now take this file and rename it too libmupdf18-32.dll

Lets build win64 dll.

Right Click to properties of libmupdf and then chose configuration manager.



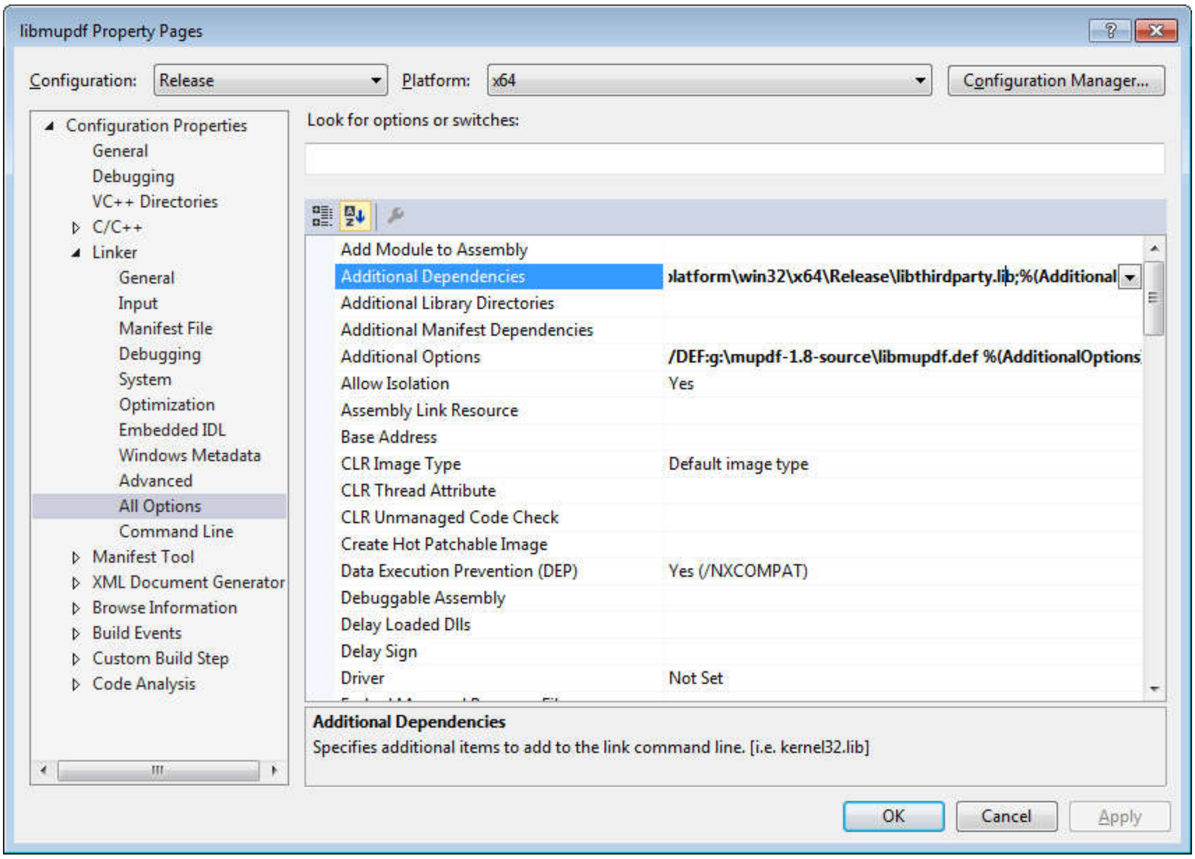
Active solution configuration: Release

Active solution platform: x64

Project contexts (check the project configurations to build or deploy):

Project	Configuration	Platform	Build	Deploy
generated	Release	x64	☑	□
libcurl	Release	x64	☑	□
libglfw	Release	Win32	□	□
libmupdf	Release	x64	☑	□
libthirdparty	Release	x64	☑	□
mudraw	Release	x64	☑	□
mujstest	Release	x64	☑	□
mupdf	Release	x64	☑	□
mupdf-curl	Release	x64	☑	□
mupdf-gl	Release	Win32	□	□
mutool	Release	x64	☑	□

Change to Release and x64.



Configuration: Release

Platform: x64

Add Module to Assembly	
Additional Dependencies	›latform\win32\x64\Release\libthirdparty.lib;%(Additional
Additional Library Directories	
Additional Manifest Dependencies	
Additional Options	/DEF:g:\mupdf-1.8-source\libmupdf.def %(AdditionalOptions
Allow Isolation	Yes
Assembly Link Resource	
Base Address	
CLR Image Type	Default image type
CLR Thread Attribute	
CLR Unmanaged Code Check	
Create Hot Patchable Image	
Data Execution Prevention (DEP)	Yes (/NXCOMPAT)
Debuggable Assembly	
Delay Loaded Dlls	
Delay Sign	
Driver	Not Set

Additional Dependencies

Specifies additional items to add to the link command line. [i.e. kernel32.lib]

kernel32.lib;user32.lib;gdi32.lib;winspool.lib;comdlg32.lib;advapi32.lib;shell32.lib;ole32.lib;oleaut

Change everything like you did for 32 version. Be carefull. Release of library in now in different directory:

32.lib;uuid.lib;odbc32.lib;odbccp32.lib;**g:\mupdf-1.8-source\platform\win32\x64\Release\libthirdparty.lib**;%(AdditionalDependencies)

Change Additional options like we did in 32 version.
/DEF:**g:\mupdf-1.8-source\libmupdf.def** %(AdditionalOptions)

Windows and static linking did not workout for me. I always got the error while linking. Something like Wrong COFF magic number. This error is the same no matter I compile with mingw or visual studio 2015.

Compilation of mupdf 1.7 did not workout for me because Visual Studio 2010 i required, or Platform Tools 2010 for Visual Studio 2015. I was not able to find Platform Tools.

Content of file libmupdf.def (function names)

```
LIBRARY libmupdf
EXPORTS

; Fitz exports variables

     pdf_document_handler
     xps_document_handler
     cbz_document_handler
     img_document_handler
     tiff_document_handler
     html_document_handler
     epub_document_handler

; Fitz exports functions

     fz_new_context_imp
     fz_register_document_handler
     fz_register_document_handlers
     fz_new_document_handler_context
     fz_drop_document_handler_context

     ; fz_free_context is changed to fz_drop_context
     ; fz_close_document is changed to fz_drop_document
     ; fz_free_device is changed to fz_drop_device
     ; fz_free_page is changed to fz_drop_page

     fz_open_document
     fz_drop_document
     fz_drop_context
     fz_drop_device
     fz_count_pages
     fz_load_page
     fz_drop_page
     fz_load_page
     fz_bound_page
     fz_run_page
     fz_new_draw_device
     fz_rotate
     fz_pre_scale
     fz_lookup_device_colorspace
     fz_pixmap_bbox
     fz_pixmap_width
     fz_pixmap_height
     fz_new_pixmap
     fz_new_pixmap_with_bbox
     fz_new_pixmap_with_data
     fz_new_pixmap_with_bbox_and_data
     fz_keep_pixmap
```

```
fz_drop_pixmap
fz_pixmap_colorspace
fz_pixmap_components
fz_pixmap_samples
fz_clear_pixmap_with_value
fz_clear_pixmap
fz_new_trace_device
fz_new_bbox_device
fz_new_draw_device_with_bbox
fz_needs_password
fz_authenticate_password
fz_transform_rect
```

Now Linux

If you think that windows was hard then Linux is dll hell (or linking hell)

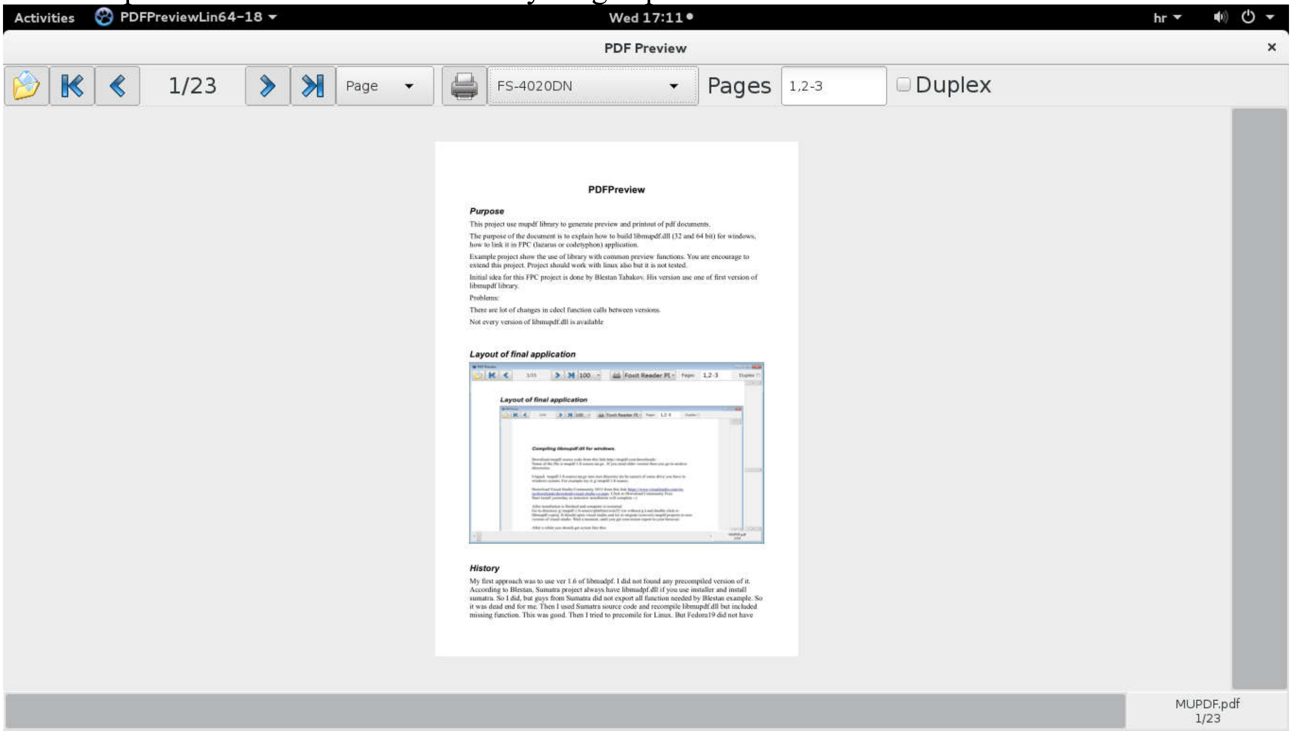
I tried Fedora 22 (64 bit) on vmware 12 (widnows host), and I tried Fedora 23 (32 bit) on vmware 12 (windows host). Fedora 22-64 was succesfull with static linking of mupdf-1.7a, but then I lost network card which I was unable to recreate. So I did not test mupdf 1.8. Cross compile on windows machine was also ok. Printer paper must be A4 on linux, otherwise application prints out empty paper ???.
When you cross compile for Linux it is important to order linuking libraries in correct order.
Chek out:
Project Inspector/ Compiler Options/Path/Libraries
For Linux 32:

```
externallibs\$(TargetCPU)_$(TargetOS);c:\codetyphon\binLibraries\i386-linux\;C:\codetyphon\binLibraries\i386-linux-qt4\
```

For Linux 64:

```
externallibs\$(TargetCPU)_$(TargetOS);C:\codetyphon\binLibraries\x86_64-linux-qt4\;C:\codetyphon\binLibraries\x86_64-linux\
```

Following screenshot is from Fedora22-64bit. Application is written with mupdf 1.8. It is crosscompiled on windows host. So everything is possible.



PDFPreview

Purpose

This project use mupdf library to generate preview and printout of pdf documents.

The purpose of the document is to explain how to build libmupdf.dll (32 and 64 bit) for windows, how to link it in FPC (lazarus or codetyphon) application.

Example project show the use of library with common preview functions. You are encourage to extend this project. Project should work with linux also but it is not tested.

Initial idea for this FPC project is done by Blestan Tabakov. His version use one of first version of libmupdf library.

Problems:

There are lot of changes in cdecl function calls between versions.

Not every version of libmupdf.dll is available

Layout of final application

History

My first approach was to use ver 1.6 of libmudpf. I did not found any precompiled version of it. According to Blestan, Sumatra project always have libmudpf.dll if you use installer and install sumatra. So I did, but guys from Sumatra did not export all function needed by Blestan example. So it was dead end for me. Then I used Sumatra source code and recompile libmupdf.dll but included missing function. This was good. Then I tried to precomile for Linux. But Fedora19 did not have

Following is my notest about Fedora 22

Install Fedora22 (I use 64 bit) on virtual machine. You will need latest vmware (12) virtual machine. After installation you will need to uninstall open-vmware-tools and install regular vmware tools. This is because you want to share drives between windows host and linux virtual machine. I installed codetyphon 5.40. Download it and unpack in user home directory (user can not be root). Run install.sh script, and choose option 0. This option will install all prerequisites needed by typhon64. Then you choose option 8 (Remove and Build All)

http://www.linuxfromscratch.org/blfs/view/svn/pst/mupdf.html
build win32
make OS=MINGW build=release

make build=release install

https://fedoraproject.org/wiki/Common_F22_bugs#No_network_connection_in_VM_when_both_host_and_guest_installed_from_a_Live_image

```
sudo virsh net-destroy default
sudo virsh net-undefine default
```

Following is my notest about Fedora 23 (64 bit)

After installing Fedora23(64 bit) – clean without CodeTyphon
For Fedora23-64bit to be able compile mupdf 1.8 following must be:

```
dnf install libX11-devel xorg-x11-proto-devel libXau-devel
dnf install libXext-devel.x86_64
dnf groupinstall 'Development Tools'
dnf install freeglut-devel.x86_64
dnf install libXcursor-devel.x86_64
dnf install glfw-devel.x86_64
```

This part was not finished - it seems to me that for 64bit version of Fedora23 we need to use gt2 widgetset

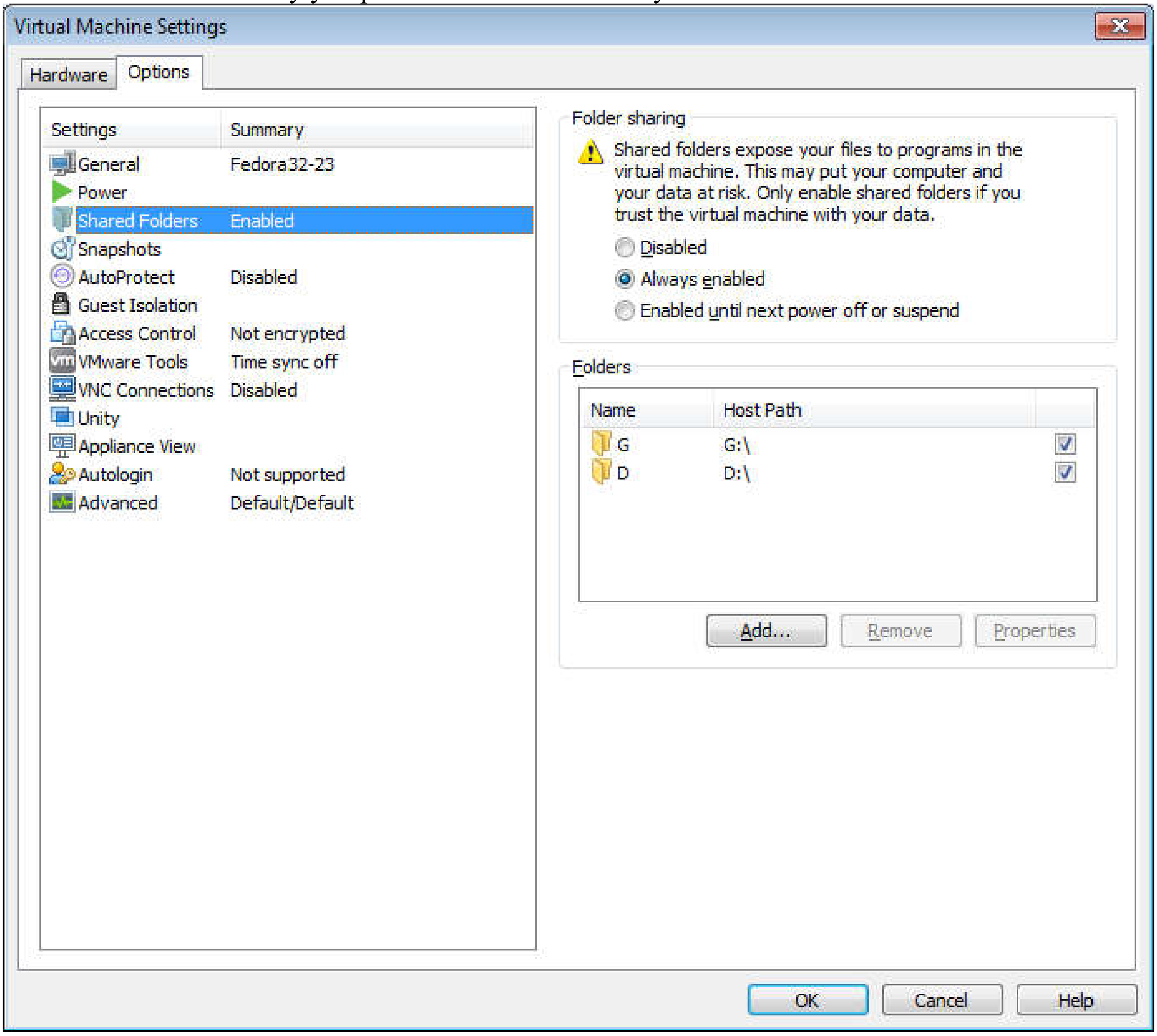
To install qt4 on fedora23-64bit you need to download package from
http://rpm.pbone.net/index.php3/stat/4/idpl/31960309/dir/fedora_23/com/qt-4.8.7-5.fc23.x86_64.rpm.html
and
http://rpm.pbone.net/index.php3/stat/3/srodzaj/1/search/libcrypto.so.10(libcrypto.so.10)
then copy in local fedora folder and type

```
dnf install openssl-libs-1.0.2e-3.fc23.i686.rpm
dnf install qt-4.8.7-5.fc23.x86_64.rpm
```

Installing Fedora23 – 32 on VMWare12.

Installation procedure:

Choose installation image and install.
After installation
Put shared disk on: G and D in vmware Settings/Options/Shared Folders
Check amount of memory you put to virtual machine. My is about 3 GB.



Settings	Summary
General	Fedora32-23
Power	
Shared Folders	Enabled
Snapshots	
AutoProtect	Disabled
Guest Isolation	
Access Control	Not encrypted
VMware Tools	Time sync off
VNC Connections	Disabled
Unity	
Appliance View	
Autologin	Not supported
Advanced	Default/Default

Folder sharing

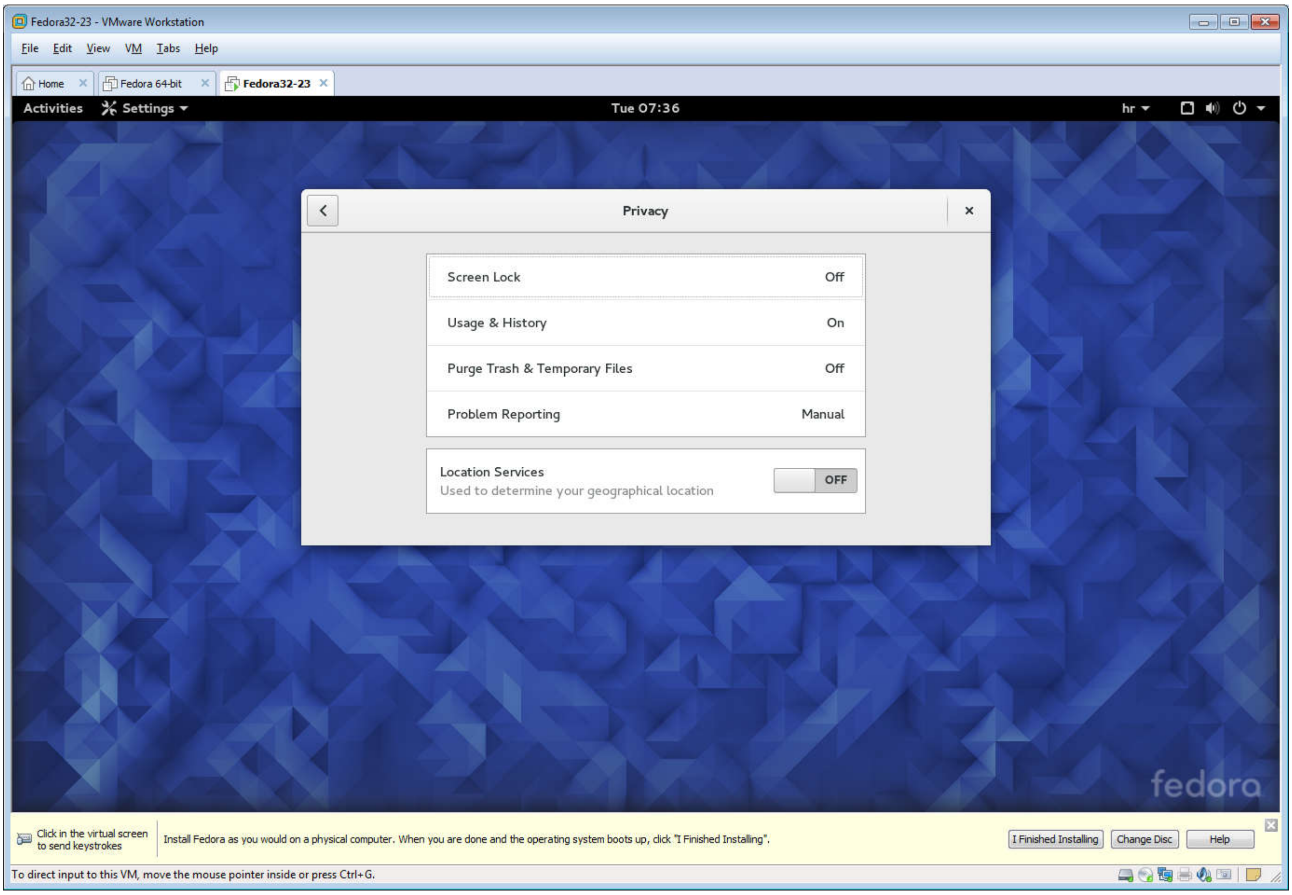
Shared folders expose your files to programs in the virtual machine. This may put your computer and your data at risk. Only enable shared folders if you trust the virtual machine with your data.

○ Disabled
● Always enabled
○ Enabled until next power off or suspend

Folders

Name	Host Path	
G	G:\	☑
D	D:\	☑

If Fedora chose Activity and type Privacy. Choose Screen Lock = Off



Fedora32-23 - VMware Workstation

Privacy

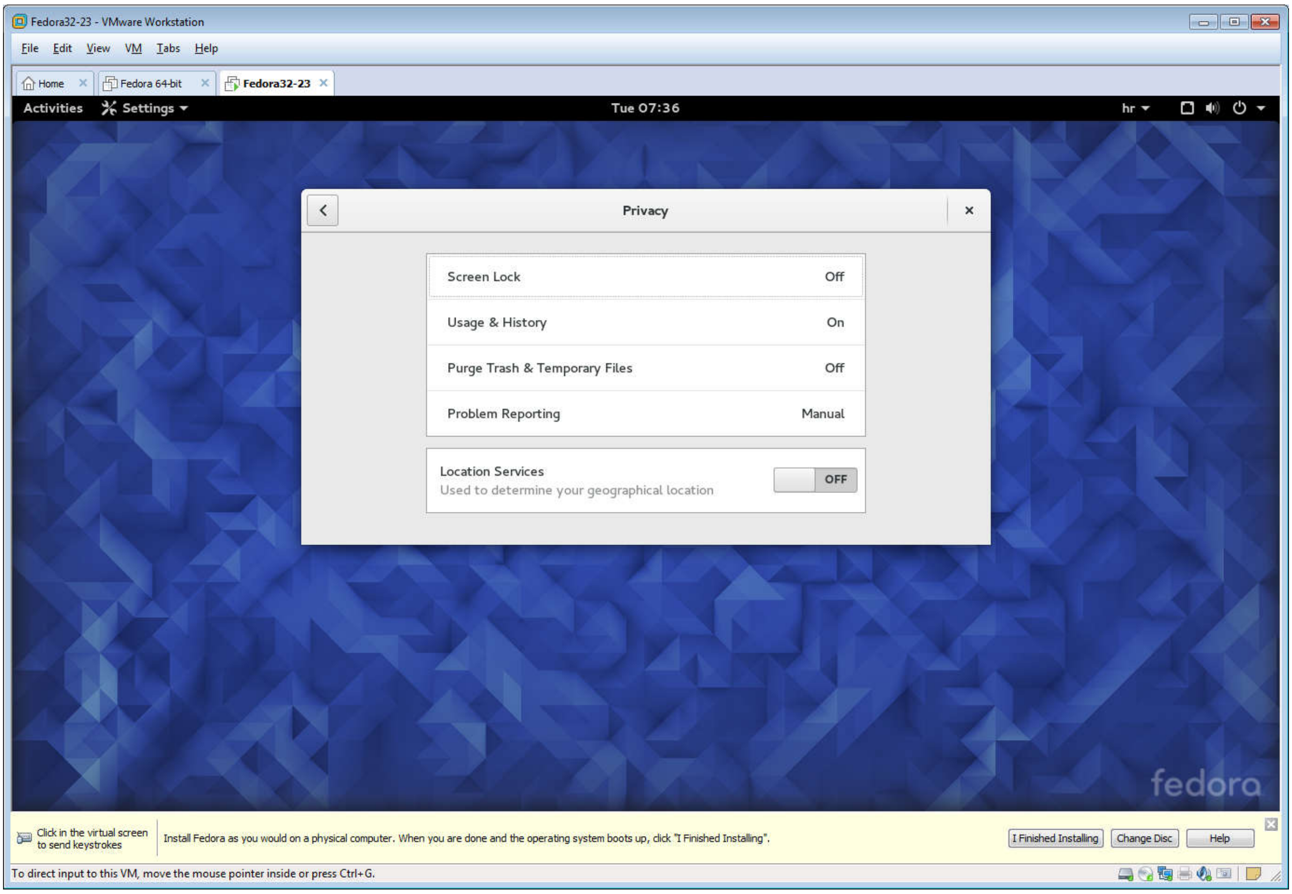
Screen Lock	Off
Usage & History	On
Purge Trash & Temporary Files	Off
Problem Reporting	Manual

Location Services OFF
Used to determine your geographical location

Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

Choose Activities/Power and Screen Lock = 0.



Fedora32-23 - VMware Workstation

Privacy

Screen Lock	Off
Usage & History	On
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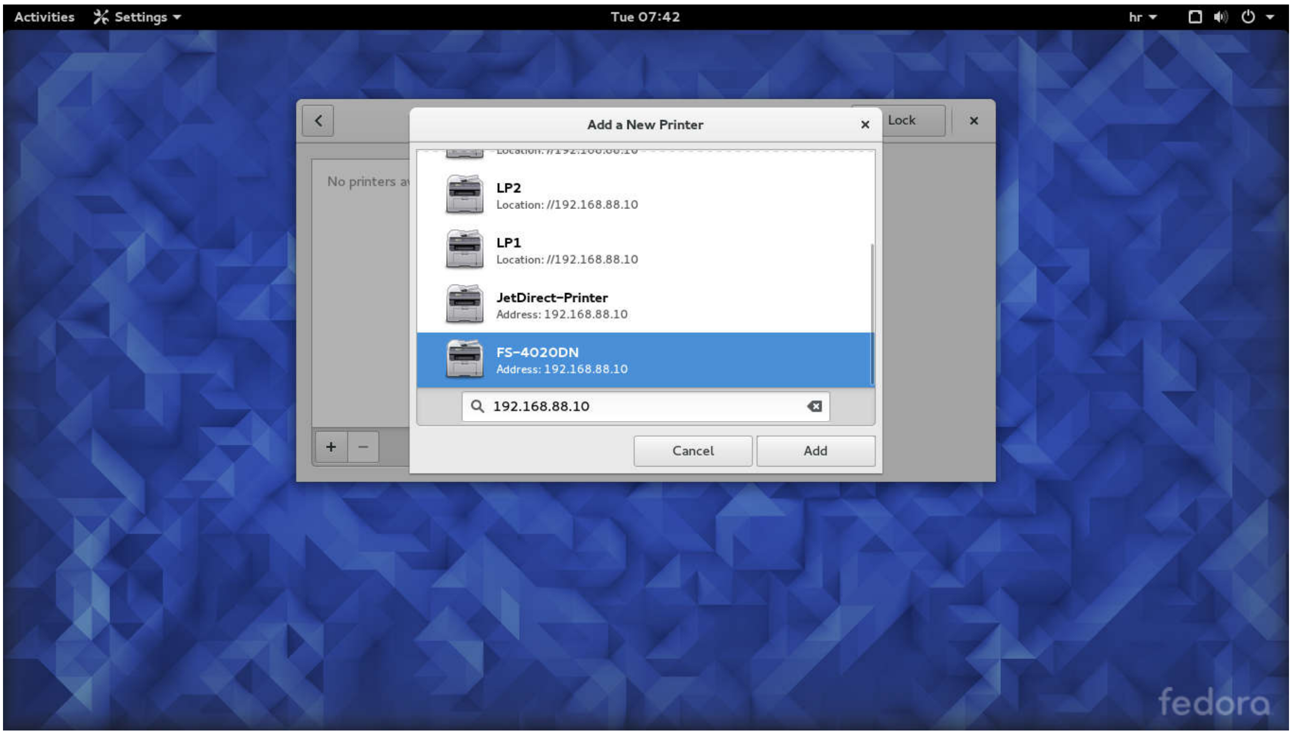
Location Services OFF
Used to determine your geographical location

Install Fedora as you would on a physical computer. When you are done and the operating system boots up, click "I Finished Installing".

To direct input to this VM, move the mouse pointer inside or press Ctrl+G.

Choos Activity and type Printers. Click Unlock and type password.
Install printer by typing ip address 192.168.88.10
Choose Jet Direct-Printer – Choose FS4000



LP2
Location: //192.168.88.10

LP1
Location: //192.168.88.10

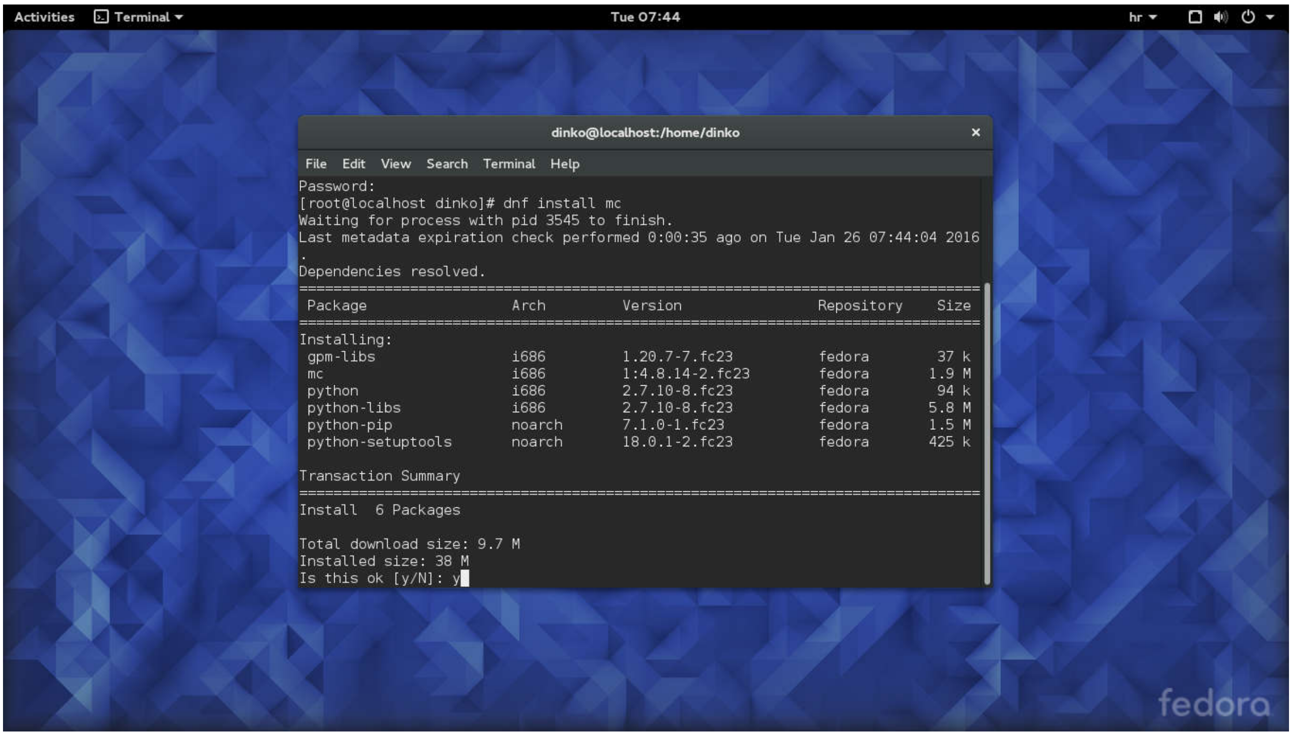
JetDirect-Printer
Address: 192.168.88.10

FS-4020DN
Address: 192.168.88.10

192.168.88.10

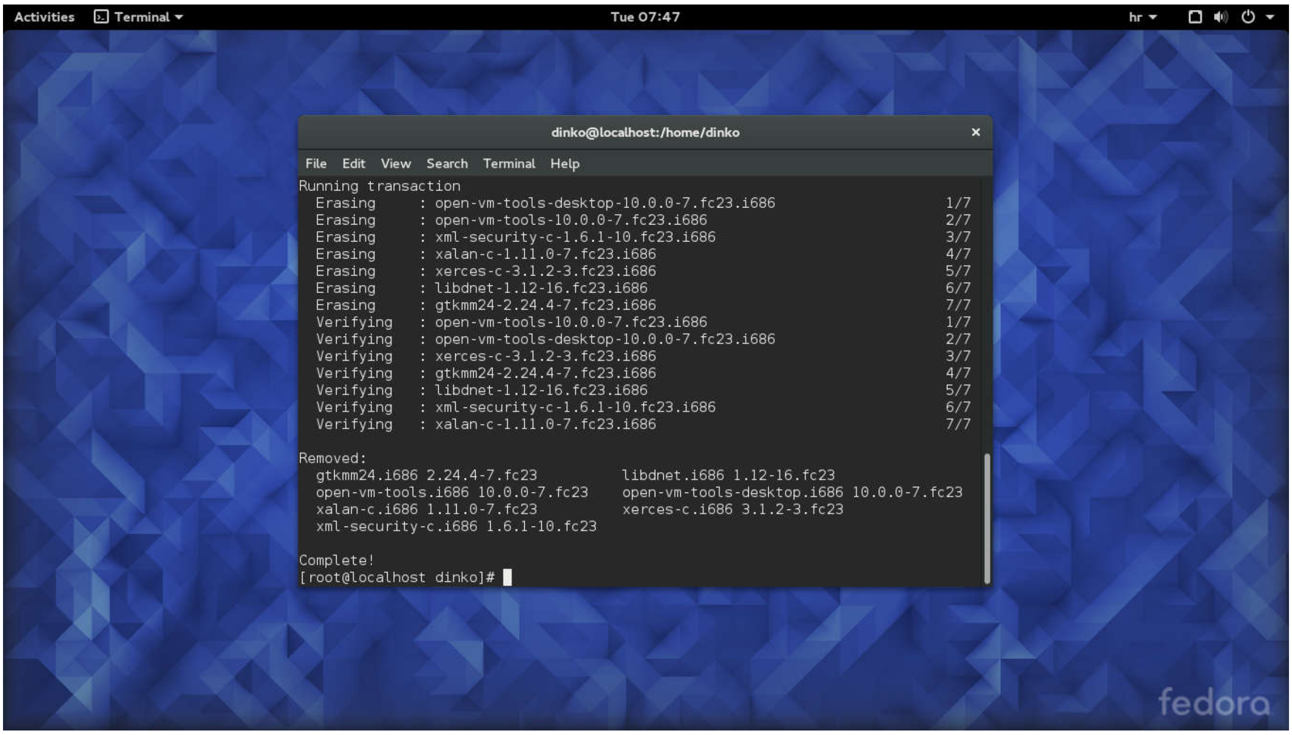
Choose FS-4020DN as driver

Install mc
Open Terminal. Activity type terminal.
Type:
su and password
dnf install mc



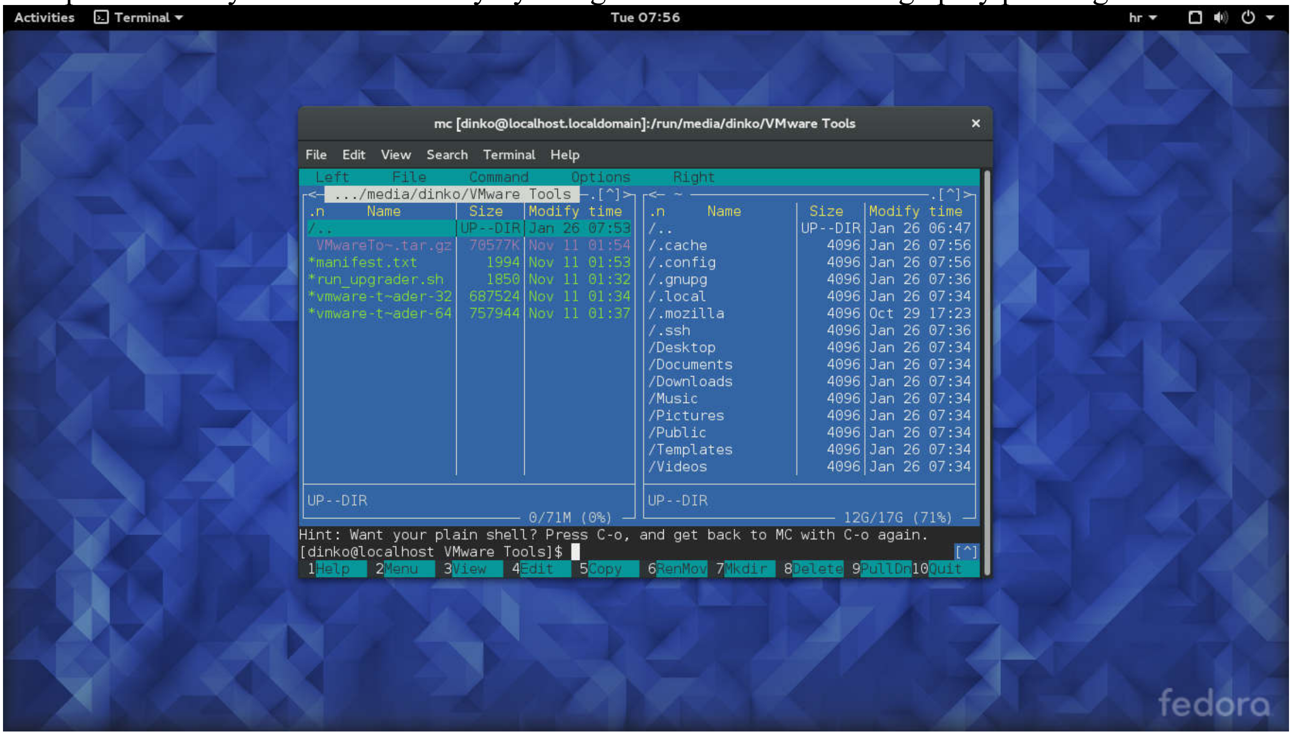
```
Password:
[root@localhost dinko]# dnf install mc
Waiting for process with pid 3545 to finish.
Last metadata expiration check performed 0:00:35 ago on Tue Jan 26 07:44:04 2016
.
Dependencies resolved.
================================================================================
 Package                  Arch        Version                 Repository   Size
================================================================================
Installing:
 gpm-libs                 i686        1.20.7-7.fc23           fedora       37 k
 mc                       i686        1:4.8.14-2.fc23         fedora      1.9 M
 python                   i686        2.7.10-8.fc23           fedora       94 k
 python-libs              i686        2.7.10-8.fc23           fedora      5.8 M
 python-pip               noarch      7.1.0-1.fc23            fedora      1.5 M
 python-setuptools        noarch      18.0.1-2.fc23           fedora      425 k

Transaction Summary
================================================================================
Install  6 Packages

Total download size: 9.7 M
Installed size: 38 M
Is this ok [y/N]: y
```

Enabling vmware shares:
uninstal open-vmware-tools
Type:
su and password
dnf remove open-vm-tools


Activities
Terminal
Tue 07:47
hr
dinko@localhost:/home/dinko
File Edit View Search Terminal Help
fedora

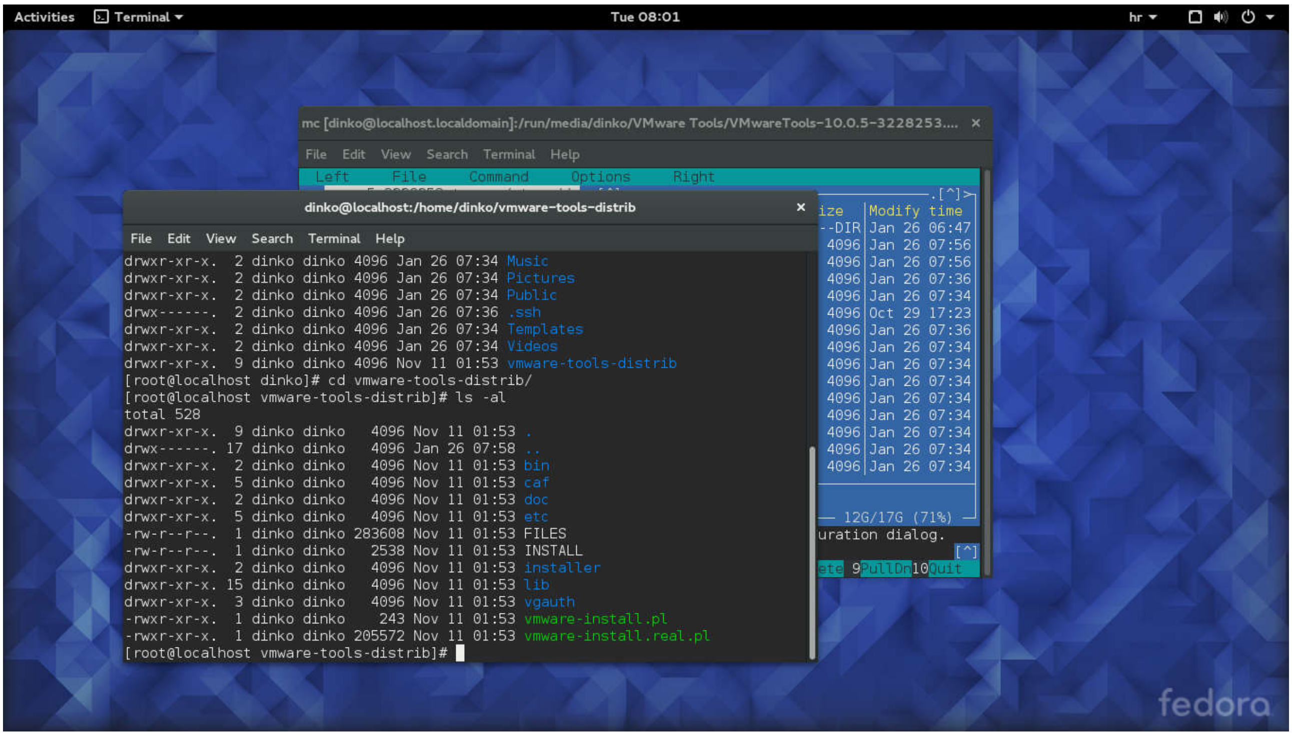
```
Running transaction
  Erasing     : open-vm-tools-desktop-10.0.0-7.fc23.i686                 1/7
  Erasing     : open-vm-tools-10.0.0-7.fc23.i686                         2/7
  Erasing     : xml-security-c-1.6.1-10.fc23.i686                        3/7
  Erasing     : xalan-c-1.11.0-7.fc23.i686                               4/7
  Erasing     : xerces-c-3.1.2-3.fc23.i686                               5/7
  Erasing     : libdnet-1.12-16.fc23.i686                                6/7
  Erasing     : gtkmm24-2.24.4-7.fc23.i686                               7/7
  Verifying   : open-vm-tools-10.0.0-7.fc23.i686                         1/7
  Verifying   : open-vm-tools-desktop-10.0.0-7.fc23.i686                 2/7
  Verifying   : xerces-c-3.1.2-3.fc23.i686                               3/7
  Verifying   : gtkmm24-2.24.4-7.fc23.i686                               4/7
  Verifying   : libdnet-1.12-16.fc23.i686                                5/7
  Verifying   : xml-security-c-1.6.1-10.fc23.i686                        6/7
  Verifying   : xalan-c-1.11.0-7.fc23.i686                               7/7

Removed:
  gtkmm24.i686 2.24.4-7.fc23           libdnet.i686 1.12-16.fc23
  open-vm-tools.i686 10.0.0-7.fc23     open-vm-tools-desktop.i686 10.0.0-7.fc23
  xalan-c.i686 1.11.0-7.fc23           xerces-c.i686 3.1.2-3.fc23
  xml-security-c.i686 1.6.1-10.fc23

Complete!
[root@localhost dinko]#
```

Go to vmware VM menu of host application and chose VM/Install VMWare Tools. Wait until tools are mounted in Fedora 23 file system.
Goto Fedora22 and open mc in terminal. Goto /run/media/dinko directory.
If not succesfull (not exists) then restart Fedora23 and try again the same procedure.
Inside directory should be VMWare Tools disk with VMWare-Tools 10.0.5-3228523 tar gzip file.
Unzip this file in your home directory by using mc. Just enter into tar gzip by pressing Enter.


Activities
Terminal
Tue 07:56
hr
mc [dinko@localhost.localdomain]:/run/media/dinko/VMware Tools
File Edit View Search Terminal Help
Left File Command Options Right
1Help 2Menu 3View 4Edit 5Copy 6RenMov 7Mkdir 8Delete 9PullDn 10Quit
fedora

```
<- .../media/dinko/VMware Tools -.[^]>  <- ~ ----------------------.[^]>
.n     Name        | Size  |Modify time  .n      Name        | Size  |Modify time
/..                |UP--DIR|Jan 26 07:53 /..                 |UP--DIR|Jan 26 06:47
 VMwareTo~.tar.gz  | 70577K|Nov 11 01:54 /.cache             |   4096|Jan 26 07:56
*manifest.txt      |   1994|Nov 11 01:53 /.config            |   4096|Jan 26 07:56
*run_upgrader.sh   |   1850|Nov 11 01:32 /.gnupg             |   4096|Jan 26 07:36
*vmware-t~ader-32  | 687524|Nov 11 01:34 /.local             |   4096|Jan 26 07:34
*vmware-t~ader-64  | 757944|Nov 11 01:37 /.mozilla           |   4096|Oct 29 17:23
                                         /.ssh               |   4096|Jan 26 07:36
                                         /Desktop            |   4096|Jan 26 07:34
                                         /Documents          |   4096|Jan 26 07:34
                                         /Downloads          |   4096|Jan 26 07:34
                                         /Music              |   4096|Jan 26 07:34
                                         /Pictures           |   4096|Jan 26 07:34
                                         /Public             |   4096|Jan 26 07:34
                                         /Templates          |   4096|Jan 26 07:34
                                         /Videos             |   4096|Jan 26 07:34
UP--DIR                                  UP--DIR
                        0/71M (0%)                           12G/17G (71%)
Hint: Want your plain shell? Press C-o, and get back to MC with C-o again.
[dinko@localhost VMware Tools]$                                          [^]
```

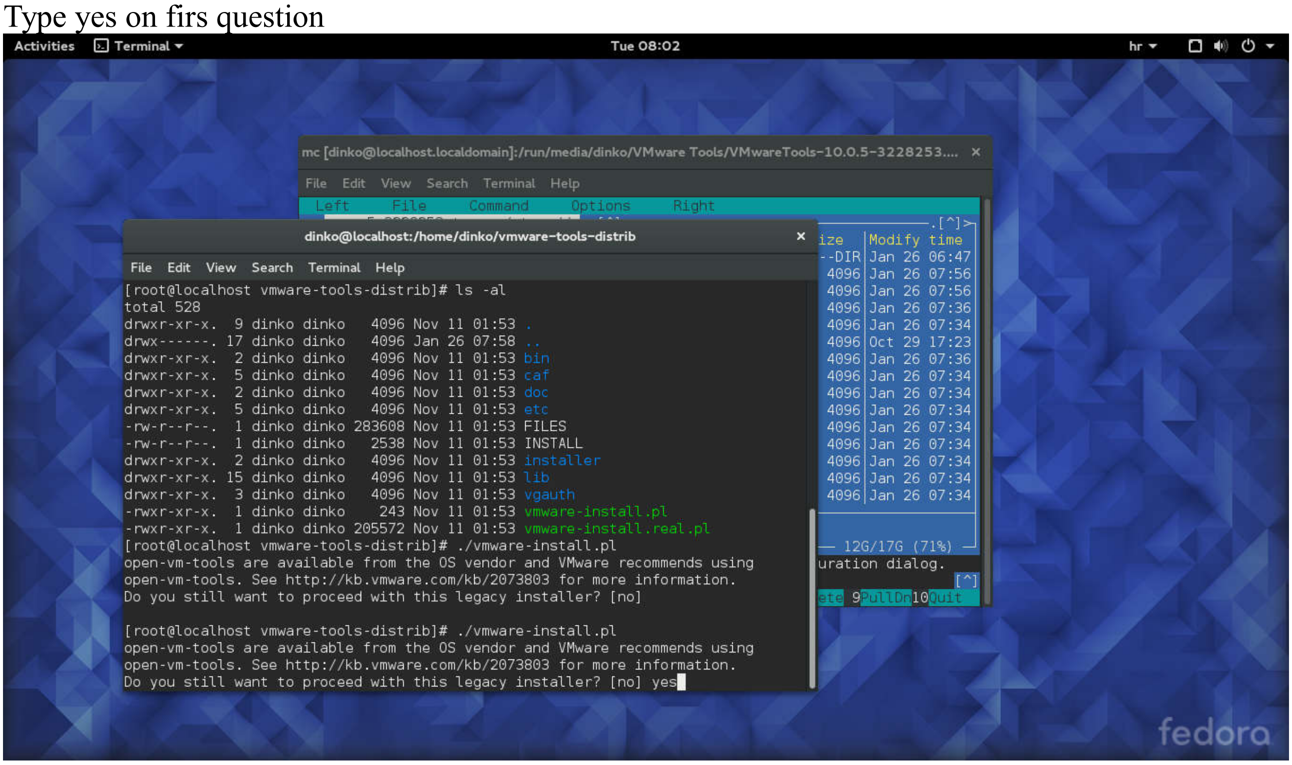
Open another terminal
type:
su and password
cd vm and press tab then enter
ls -al


Activities
Terminal
Tue 08:01
hr
mc [dinko@localhost.localdomain]:/run/media/dinko/VMware Tools/VMwareTools-10.0.5-3228253....
File Edit View Search Terminal Help
Left File Command Options Right
dinko@localhost:/home/dinko/vmware-tools-distrib
File Edit View Search Terminal Help
fedora

```
drwxr-xr-x.  2 dinko dinko 4096 Jan 26 07:34 Music
drwxr-xr-x.  2 dinko dinko 4096 Jan 26 07:34 Pictures
drwxr-xr-x.  2 dinko dinko 4096 Jan 26 07:34 Public
drwx------.  2 dinko dinko 4096 Jan 26 07:36 .ssh
drwxr-xr-x.  2 dinko dinko 4096 Jan 26 07:34 Templates
drwxr-xr-x.  2 dinko dinko 4096 Jan 26 07:34 Videos
drwxr-xr-x.  9 dinko dinko 4096 Nov 11 01:53 vmware-tools-distrib
[root@localhost dinko]# cd vmware-tools-distrib/
[root@localhost vmware-tools-distrib]# ls -al
total 528
drwxr-xr-x.  9 dinko dinko   4096 Nov 11 01:53 .
drwx------. 17 dinko dinko   4096 Jan 26 07:58 ..
drwxr-xr-x.  2 dinko dinko   4096 Nov 11 01:53 bin
drwxr-xr-x.  5 dinko dinko   4096 Nov 11 01:53 caf
drwxr-xr-x.  2 dinko dinko   4096 Nov 11 01:53 doc
drwxr-xr-x.  5 dinko dinko   4096 Nov 11 01:53 etc
-rw-r--r--.  1 dinko dinko 283608 Nov 11 01:53 FILES
-rw-r--r--.  1 dinko dinko   2538 Nov 11 01:53 INSTALL
drwxr-xr-x.  2 dinko dinko   4096 Nov 11 01:53 installer
drwxr-xr-x. 15 dinko dinko   4096 Nov 11 01:53 lib
drwxr-xr-x.  3 dinko dinko   4096 Nov 11 01:53 vgauth
-rwxr-xr-x.  1 dinko dinko    243 Nov 11 01:53 vmware-install.pl
-rwxr-xr-x.  1 dinko dinko 205572 Nov 11 01:53 vmware-install.real.pl
[root@localhost vmware-tools-distrib]#
```

```
.[^]>
ize |Modify time
--DIR|Jan 26 06:47
 4096|Jan 26 07:56
 4096|Jan 26 07:56
 4096|Jan 26 07:36
 4096|Jan 26 07:34
 4096|Oct 29 17:23
 4096|Jan 26 07:36
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 12G/17G (71%)
uration dialog.
                 [^]
ete 9PullDn10Quit
```

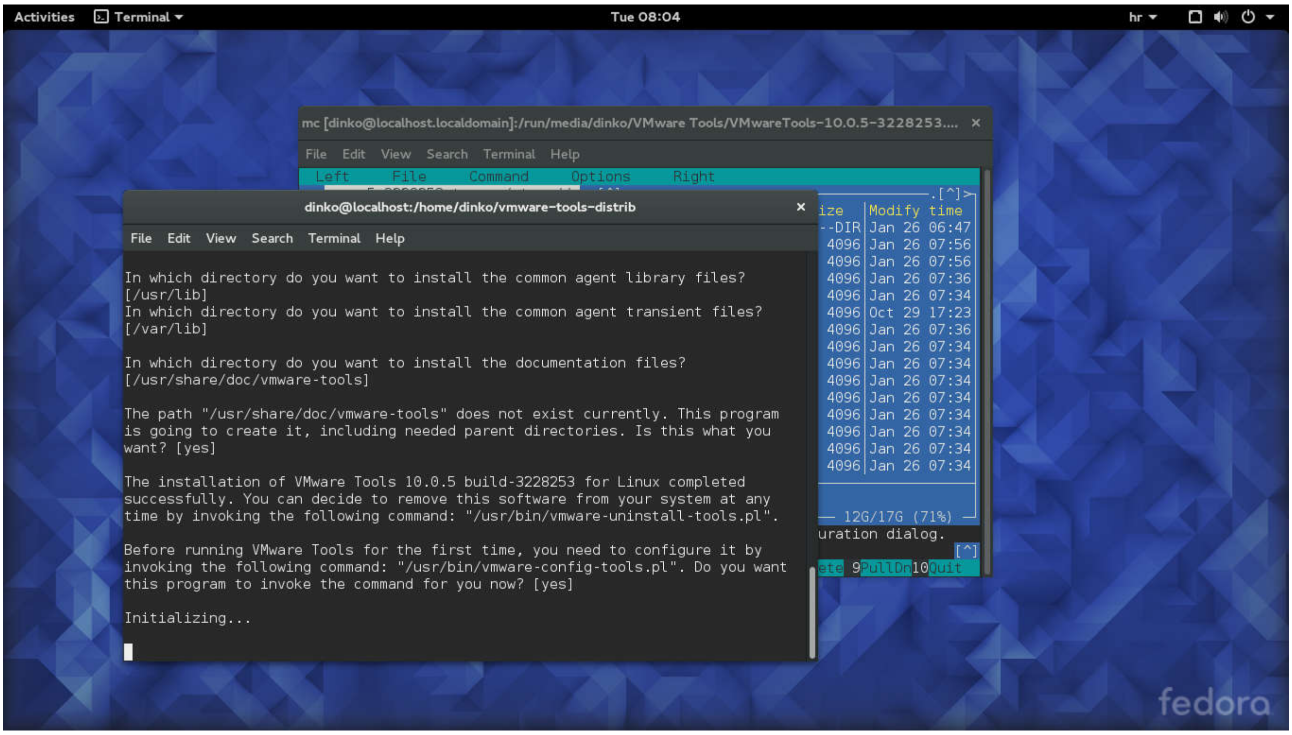
type to start installation
./vmware-install.pl
Type yes on firs question


Activities
Terminal
Tue 08:02
hr
mc [dinko@localhost.localdomain]:/run/media/dinko/VMware Tools/VMwareTools-10.0.5-3228253....
File Edit View Search Terminal Help
Left File Command Options Right
dinko@localhost:/home/dinko/vmware-tools-distrib
File Edit View Search Terminal Help
fedora

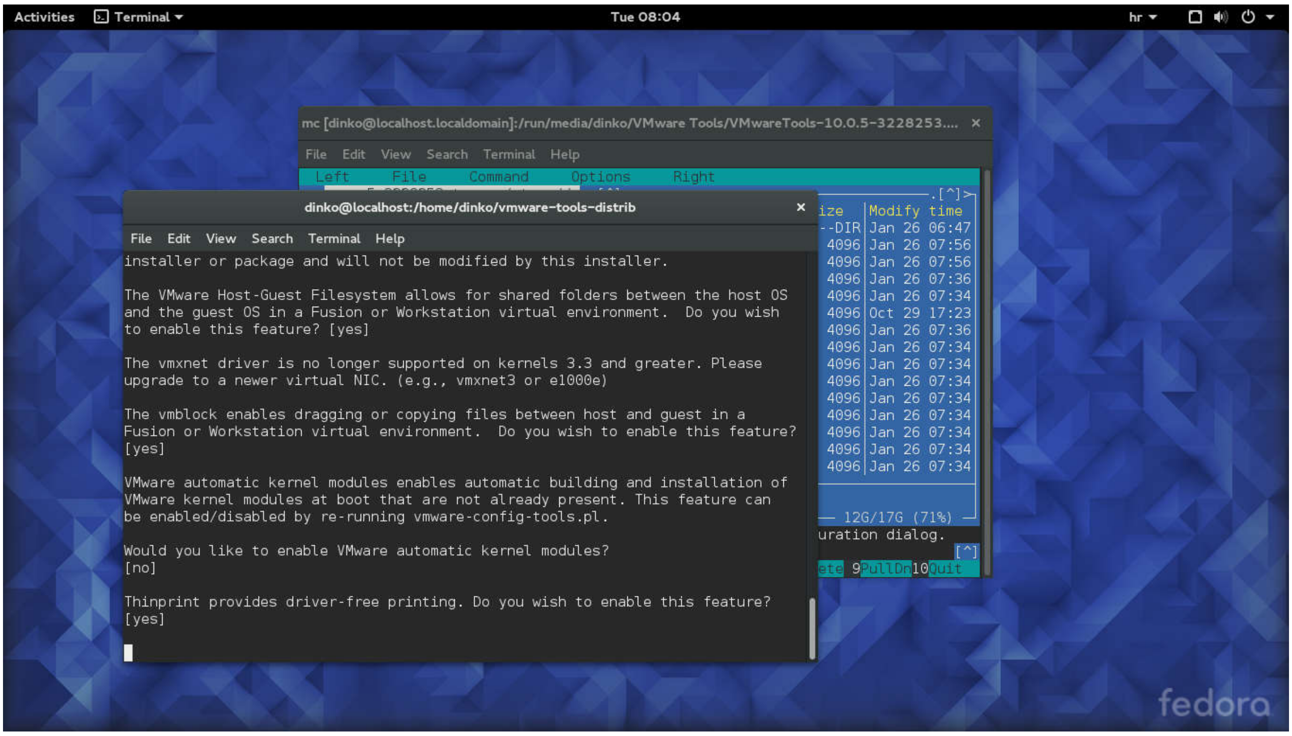
```
[root@localhost vmware-tools-distrib]# ls -al
total 528
drwxr-xr-x.  9 dinko dinko   4096 Nov 11 01:53 .
drwx------. 17 dinko dinko   4096 Jan 26 07:58 ..
drwxr-xr-x.  2 dinko dinko   4096 Nov 11 01:53 bin
drwxr-xr-x.  5 dinko dinko   4096 Nov 11 01:53 caf
drwxr-xr-x.  2 dinko dinko   4096 Nov 11 01:53 doc
drwxr-xr-x.  5 dinko dinko   4096 Nov 11 01:53 etc
-rw-r--r--.  1 dinko dinko 283608 Nov 11 01:53 FILES
-rw-r--r--.  1 dinko dinko   2538 Nov 11 01:53 INSTALL
drwxr-xr-x.  2 dinko dinko   4096 Nov 11 01:53 installer
drwxr-xr-x. 15 dinko dinko   4096 Nov 11 01:53 lib
drwxr-xr-x.  3 dinko dinko   4096 Nov 11 01:53 vgauth
-rwxr-xr-x.  1 dinko dinko    243 Nov 11 01:53 vmware-install.pl
-rwxr-xr-x.  1 dinko dinko 205572 Nov 11 01:53 vmware-install.real.pl
[root@localhost vmware-tools-distrib]# ./vmware-install.pl
open-vm-tools are available from the OS vendor and VMware recommends using
open-vm-tools. See http://kb.vmware.com/kb/2073803 for more information.
Do you still want to proceed with this legacy installer? [no]

[root@localhost vmware-tools-distrib]# ./vmware-install.pl
open-vm-tools are available from the OS vendor and VMware recommends using
open-vm-tools. See http://kb.vmware.com/kb/2073803 for more information.
Do you still want to proceed with this legacy installer? [no] yes
```

```
.[^]>
ize |Modify time
--DIR|Jan 26 06:47
 4096|Jan 26 07:56
 4096|Jan 26 07:56
 4096|Jan 26 07:36
 4096|Jan 26 07:34
 4096|Oct 29 17:23
 4096|Jan 26 07:36
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 4096|Jan 26 07:34
 12G/17G (71%)
uration dialog.
                 [^]
ete 9PullDn10Quit
```

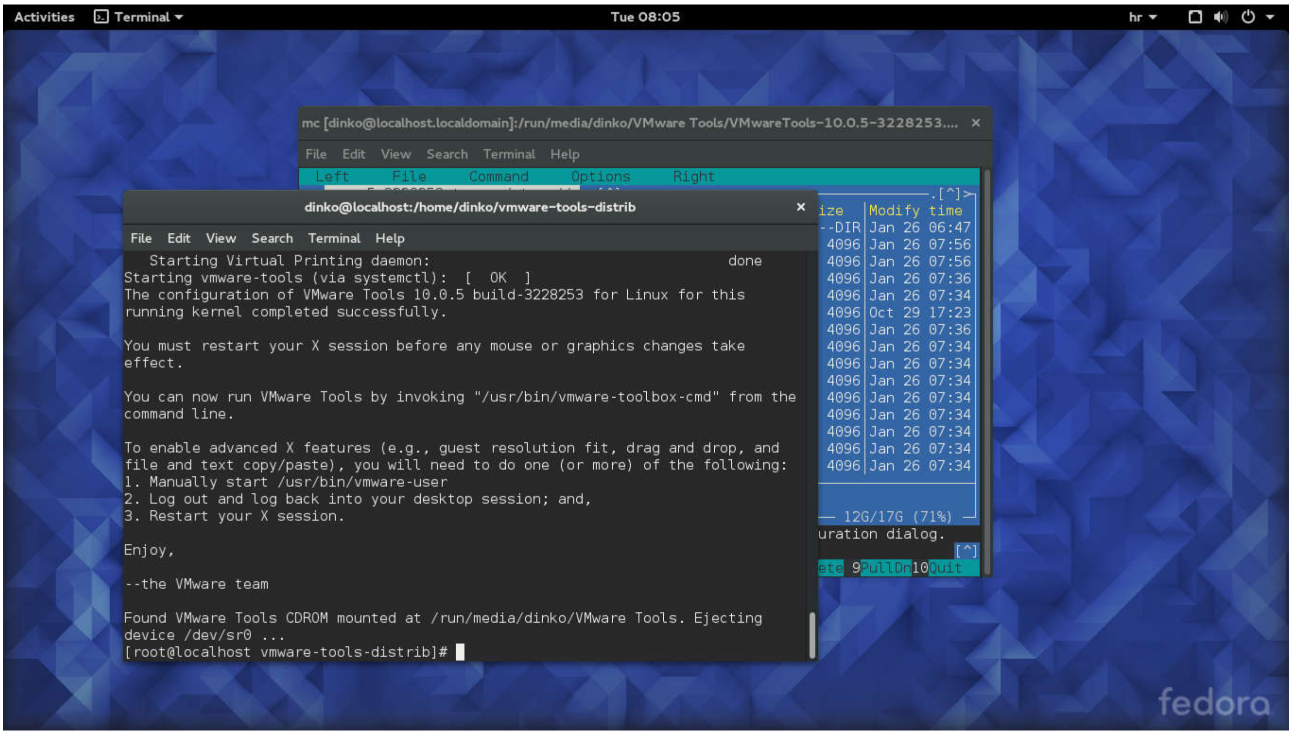
Confirm every question with default by pressing enter. Wait until installation is finished


Activities
Terminal
Tue 08:04
hr
mc [dinko@localhost.localdomain]:/run/media/dinko/VMware Tools/VMwareTools-10.0.5-3228253....
dinko@localhost:/home/dinko/vmware-tools-distrib
File Edit View Search Terminal Help
fedora

```
In which directory do you want to install the common agent library files?
[/usr/lib]
In which directory do you want to install the common agent transient files?
[/var/lib]

In which directory do you want to install the documentation files?
[/usr/share/doc/vmware-tools]

The path "/usr/share/doc/vmware-tools" does not exist currently. This program
is going to create it, including needed parent directories. Is this what you
want? [yes]

The installation of VMware Tools 10.0.5 build-3228253 for Linux completed
successfully. You can decide to remove this software from your system at any
time by invoking the following command: "/usr/bin/vmware-uninstall-tools.pl".

Before running VMware Tools for the first time, you need to configure it by
invoking the following command: "/usr/bin/vmware-config-tools.pl". Do you want
this program to invoke the command for you now? [yes]

Initializing...

```


Activities
Terminal
Tue 08:04
hr
mc [dinko@localhost.localdomain]:/run/media/dinko/VMware Tools/VMwareTools-10.0.5-3228253....
dinko@localhost:/home/dinko/vmware-tools-distrib
File Edit View Search Terminal Help
fedora

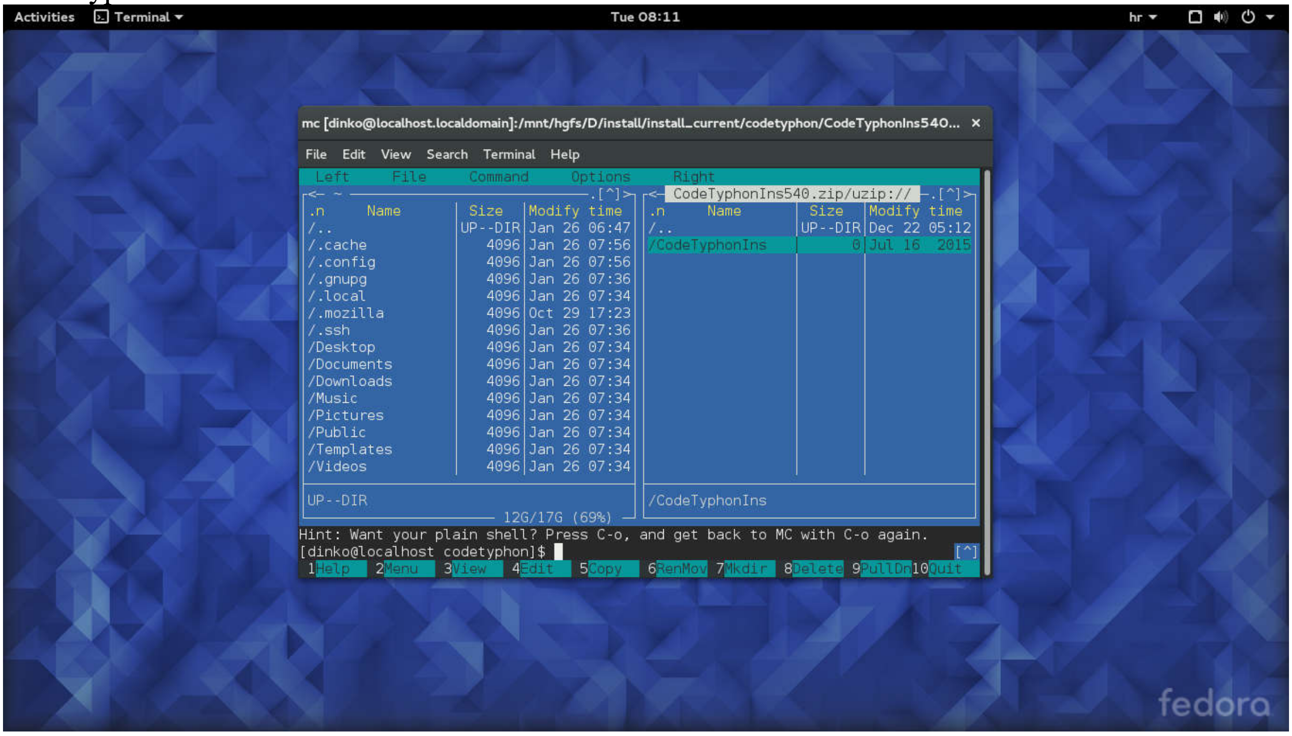
```
installer or package and will not be modified by this installer.

The VMware Host-Guest Filesystem allows for shared folders between the host OS
and the guest OS in a Fusion or Workstation virtual environment.  Do you wish
to enable this feature? [yes]

The vmxnet driver is no longer supported on kernels 3.3 and greater. Please
upgrade to a newer virtual NIC. (e.g., vmxnet3 or e1000e)

The vmblock enables dragging or copying files between host and guest in a
Fusion or Workstation virtual environment.  Do you wish to enable this feature?
[yes]

VMware automatic kernel modules enables automatic building and installation of
VMware kernel modules at boot that are not already present. This feature can
be enabled/disabled by re-running vmware-config-tools.pl.

Would you like to enable VMware automatic kernel modules?
[no]

Thinprint provides driver-free printing. Do you wish to enable this feature?
[yes]

```


Activities
Terminal
Tue 08:05
hr
mc [dinko@localhost.localdomain]:/run/media/dinko/VMware Tools/VMwareTools-10.0.5-3228253....
dinko@localhost:/home/dinko/vmware-tools-distrib
File Edit View Search Terminal Help
fedora

```
   Starting Virtual Printing daemon:                                done
Starting vmware-tools (via systemctl):  [  OK  ]
The configuration of VMware Tools 10.0.5 build-3228253 for Linux for this
running kernel completed successfully.

You must restart your X session before any mouse or graphics changes take
effect.

You can now run VMware Tools by invoking "/usr/bin/vmware-toolbox-cmd" from the
command line.

To enable advanced X features (e.g., guest resolution fit, drag and drop, and
file and text copy/paste), you will need to do one (or more) of the following:
1. Manually start /usr/bin/vmware-user
2. Log out and log back into your desktop session; and,
3. Restart your X session.

Enjoy,

--the VMware team

Found VMware Tools CDROM mounted at /run/media/dinko/VMware Tools. Ejecting
device /dev/sr0 ...
[root@localhost vmware-tools-distrib]#
```

Restart Fedora 23

Now you should have shared directories from host. Open terminal and find /mnt/hgfs/G and /mnt/hgfs/D directory. If you find it then you are ready to install codetyphon. I install CodeTyphon540


Activities
Terminal
Tue 08:11
hr
mc [dinko@localhost.localdomain]:/mnt/hgfs/D/install/install_current/codetyphon/CodeTyphonIns540...
File Edit View Search Terminal Help
fedora

```
  Left     File     Command     Options     Right
<- ~ ---------------------------.[^]> <- CodeTyphonIns540.zip/uzip:// -.[^]>
.n      Name         Size |Modify time   .n      Name        Size |Modify time
/..                UP--DIR|Jan 26 06:47  /..              UP--DIR|Dec 22 05:12
/.cache               4096|Jan 26 07:56  /CodeTyphonIns          0|Jul 16  2015
/.config              4096|Jan 26 07:56
/.gnupg               4096|Jan 26 07:36
/.local               4096|Jan 26 07:34
/.mozilla             4096|Oct 29 17:23
/.ssh                 4096|Jan 26 07:36
/Desktop              4096|Jan 26 07:34
/Documents            4096|Jan 26 07:34
/Downloads            4096|Jan 26 07:34
/Music                4096|Jan 26 07:34
/Pictures             4096|Jan 26 07:34
/Public               4096|Jan 26 07:34
/Templates            4096|Jan 26 07:34
/Videos               4096|Jan 26 07:34

UP--DIR                                  /CodeTyphonIns
---------------------- 12G/17G (69%) -
Hint: Want your plain shell? Press C-o, and get back to MC with C-o again.
[dinko@localhost codetyphon]$                                            [^]
 1Help  2Menu  3View  4Edit  5Copy  6RenMov 7Mkdir  8Delete 9PullDn10Quit
```

Find you codetyphon installation on host disks and unzip CodeTyphonIns folder in your home directory. Check this link

1)-Copy, Unzip CodeTyphonIns.zip

2)-Install "nano" text editor

```
su and password

dnf install nano
```

3)-Give full "sudo" permissions to current user.

```
su

sudo nano /etc/sudoers
```

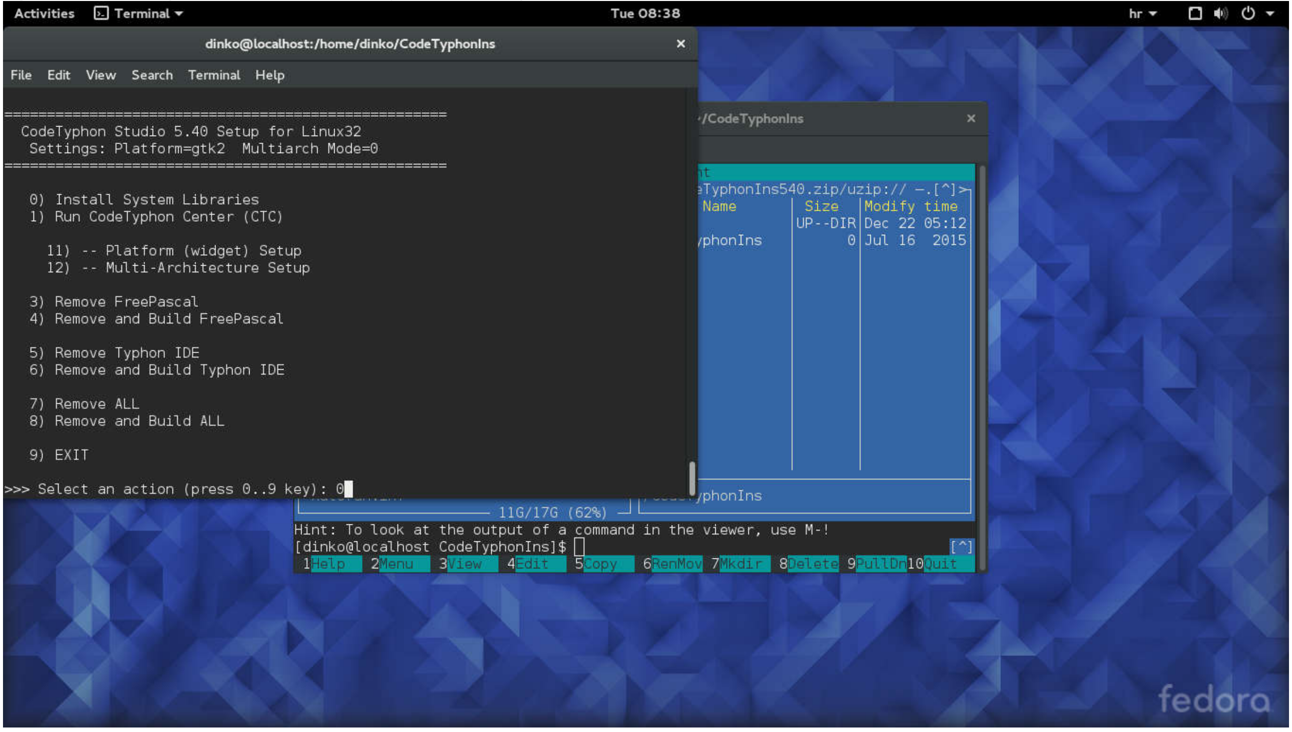
add in the end of /etc/sudoers the line

```
username        ALL=(ALL) NOPASSWD: ALL
```

and comment out the following line in /etc/sudoers:

```
#Defaults requiretty - this part I did not found in Fedora 23
```

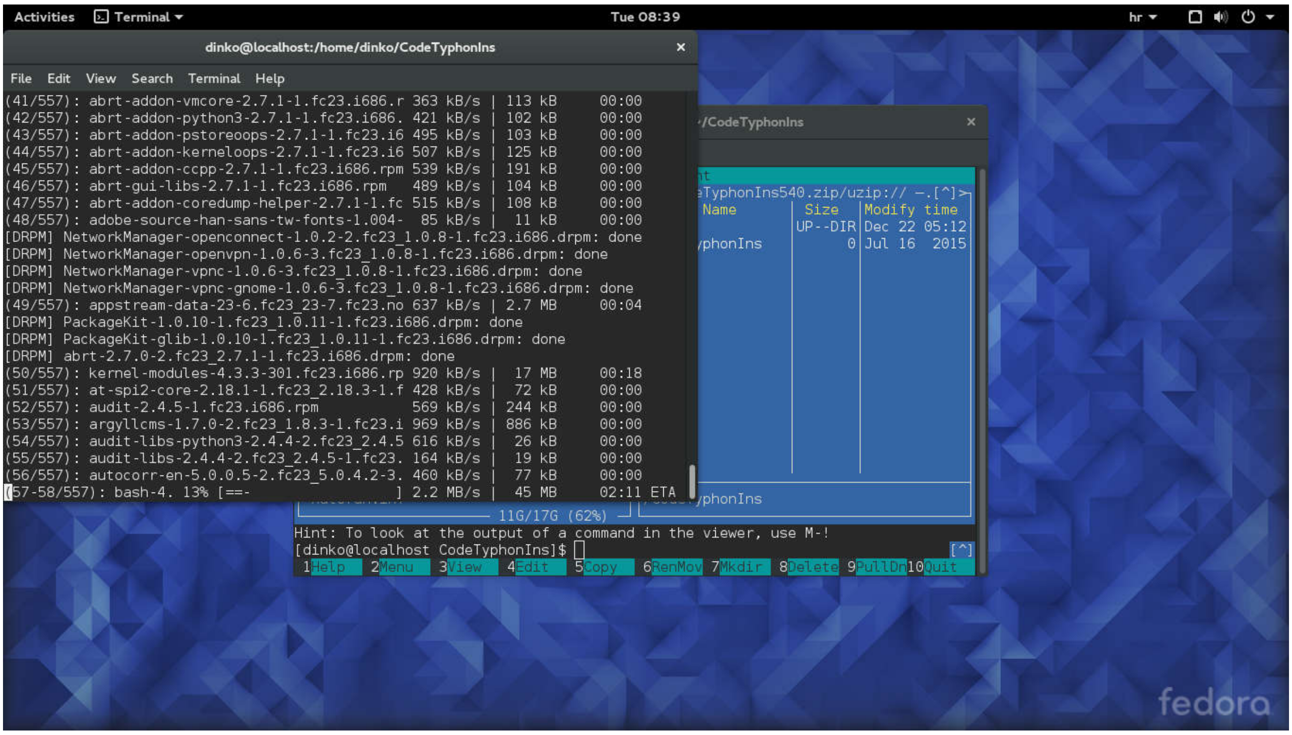
4)-Install CodeTyphon
5)-Install "System Libraries" from CT setup script. Option 0
6)-Build ALL (Freepascal and Typhon IDE).



```
=====================================================
  CodeTyphon Studio 5.40 Setup for Linux32
   Settings: Platform=gtk2  Multiarch Mode=0
=====================================================

   0) Install System Libraries
   1) Run CodeTyphon Center (CTC)

     11) -- Platform (widget) Setup
     12) -- Multi-Architecture Setup

   3) Remove FreePascal
   4) Remove and Build FreePascal

   5) Remove Typhon IDE
   6) Remove and Build Typhon IDE

   7) Remove ALL
   8) Remove and Build ALL

   9) EXIT

>>> Select an action (press 0..9 key): 0
```

```
eTyphonIns540.zip/uzip:// -.[^]>
 Name         |  Size  |Modify time
              |UP--DIR |Dec 22 05:12
yphonIns      |       0|Jul 16  2015

11G/17G (62%)
Hint: To look at the output of a command in the viewer, use M-!
[dinko@localhost CodeTyphonIns]$                            [^]
 1Help  2Menu  3View  4Edit  5Copy  6RenMov 7Mkdir  8Delete 9PullDn10Quit
```

Installation sometimes fail. Check amount of memory you put to virtual machine. My is about 3 GB.



```
(41/557): abrt-addon-vmcore-2.7.1-1.fc23.i686.r 363 kB/s | 113 kB     00:00
(42/557): abrt-addon-python3-2.7.1-1.fc23.i686. 421 kB/s | 102 kB     00:00
(43/557): abrt-addon-pstoreoops-2.7.1-1.fc23.i6 495 kB/s | 103 kB     00:00
(44/557): abrt-addon-kerneloops-2.7.1-1.fc23.i6 507 kB/s | 125 kB     00:00
(45/557): abrt-addon-ccpp-2.7.1-1.fc23.i686.rpm 539 kB/s | 191 kB     00:00
(46/557): abrt-gui-libs-2.7.1-1.fc23.i686.rpm   489 kB/s | 104 kB     00:00
(47/557): abrt-addon-coredump-helper-2.7.1-1.fc 515 kB/s | 108 kB     00:00
(48/557): adobe-source-han-sans-tw-fonts-1.004-  85 kB/s |  11 kB     00:00
[DRPM] NetworkManager-openconnect-1.0.2-2.fc23_1.0.8-1.fc23.i686.drpm: done
[DRPM] NetworkManager-openvpn-1.0.6-3.fc23_1.0.8-1.fc23.i686.drpm: done
[DRPM] NetworkManager-vpnc-1.0.6-3.fc23_1.0.8-1.fc23.i686.drpm: done
[DRPM] NetworkManager-vpnc-gnome-1.0.6-3.fc23_1.0.8-1.fc23.i686.drpm: done
(49/557): appstream-data-23-6.fc23_23-7.fc23.no 637 kB/s | 2.7 MB     00:04
[DRPM] PackageKit-1.0.10-1.fc23_1.0.11-1.fc23.i686.drpm: done
[DRPM] PackageKit-glib-1.0.10-1.fc23_1.0.11-1.fc23.i686.drpm: done
[DRPM] abrt-2.7.0-2.fc23_2.7.1-1.fc23.i686.drpm: done
(50/557): kernel-modules-4.3.3-301.fc23.i686.rp 920 kB/s |  17 MB     00:18
(51/557): at-spi2-core-2.18.1-1.fc23_2.18.3-1.f 428 kB/s |  72 kB     00:00
(52/557): audit-2.4.5-1.fc23.i686.rpm           569 kB/s | 244 kB     00:00
(53/557): argyllcms-1.7.0-2.fc23_1.8.3-1.fc23.i 969 kB/s | 886 kB     00:00
(54/557): audit-libs-python3-2.4.4-2.fc23_2.4.5 616 kB/s |  26 kB     00:00
(55/557): audit-libs-2.4.4-2.fc23_2.4.5-1.fc23. 164 kB/s |  19 kB     00:00
(56/557): autocorr-en-5.0.0.5-2.fc23_5.0.4.2-3. 460 kB/s |  77 kB     00:00
(57-58/557): bash-4. 13% [==-                 ] 2.2 MB/s |  45 MB     02:11 ETA
```

```
eTyphonIns540.zip/uzip:// —.[^]>
 Name      |  Size  |Modify time
           |UP--DIR |Dec 22 05:12
yphonIns   |       0|Jul 16  2015

yphonIns
              11G/17G (62%)
Hint: To look at the output of a command in the viewer, use M-!
[dinko@localhost CodeTyphonIns]$                                [^]
 1Help  2Menu  3View  4Edit  5Copy  6RenMov 7Mkdir  8Delete 9PullDn10Quit
```

After installation is finished type
dnf install qt4pas-devel-2.5-7.fc23.i686

Do not install dnf install mupdf-devel-1.7a-4.fc23.i686
Do not install dnf install mupdf-1.7a-4.fc23.i686

Duplex Printing of Windows

This was really big problem. I was unable to set duplex printing on windows for 2 days. Now I have solution, but this solution change global DUPLEX print variable on printer driver (and after print it puts it back to original settings). I think that it will be better solution that I installed one driver with SIMPLEX setting and other one with DUPLEX settings, but this is not good solution for me because I have many terminals and I have to go to each and every one and set printers.

Windows solution is in file WinPrinterUtils.pas

Linux duplex printing is not set at all.

Reference:

https://support.microsoft.com/en-us/kb/167345

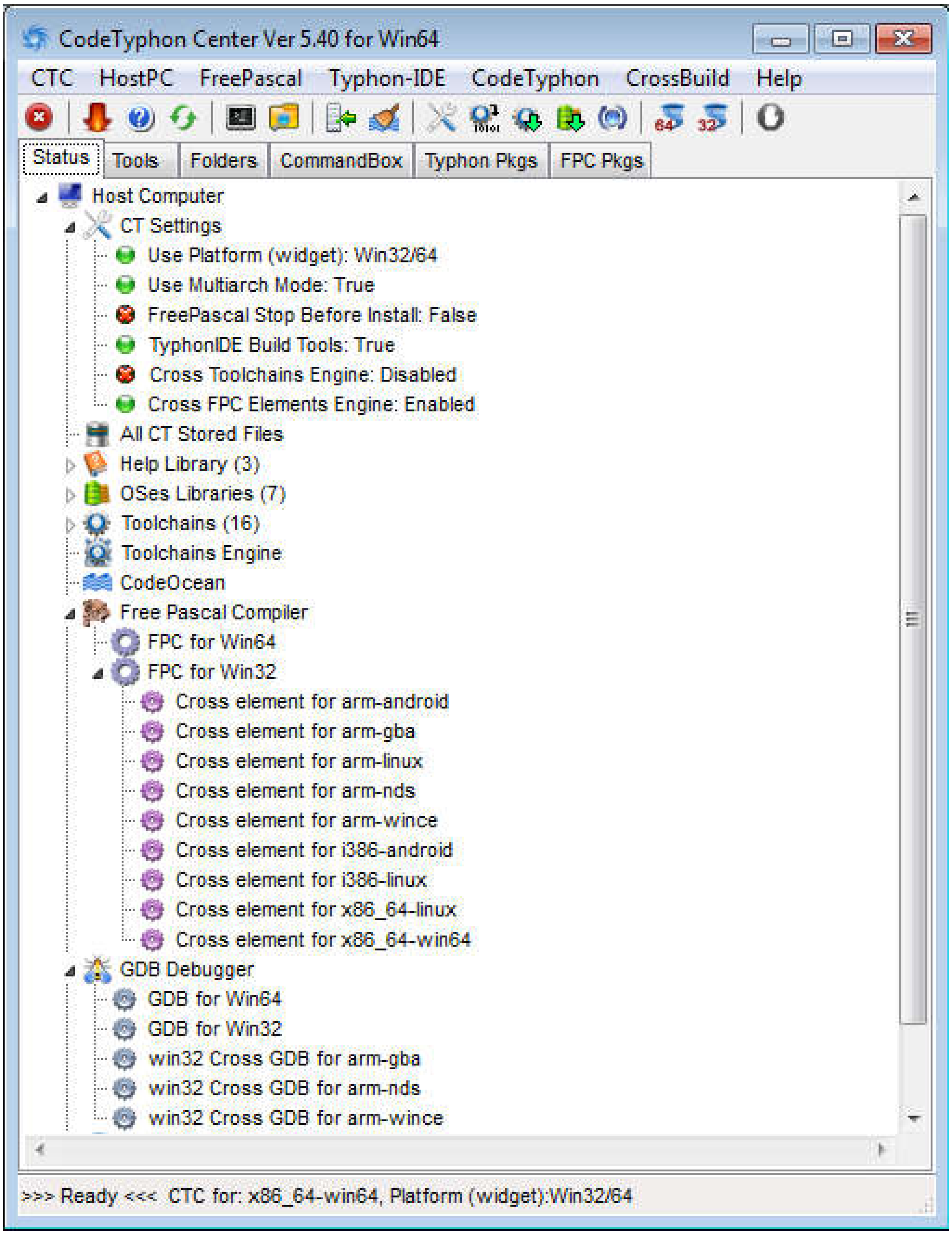
Also I found some printersettings.zip on lazarus forum.

http://forum.lazarus.freepascal.org/index.php/topic,15444.msg83670.html#msg83670

Setting CodeTyphon for cross compiling

This is easy with CodeTyphon, but it is long process.

Install CodeTyphon for windows as usual. I have 64 bit machine, so afer installation i start CodeTyphon64.



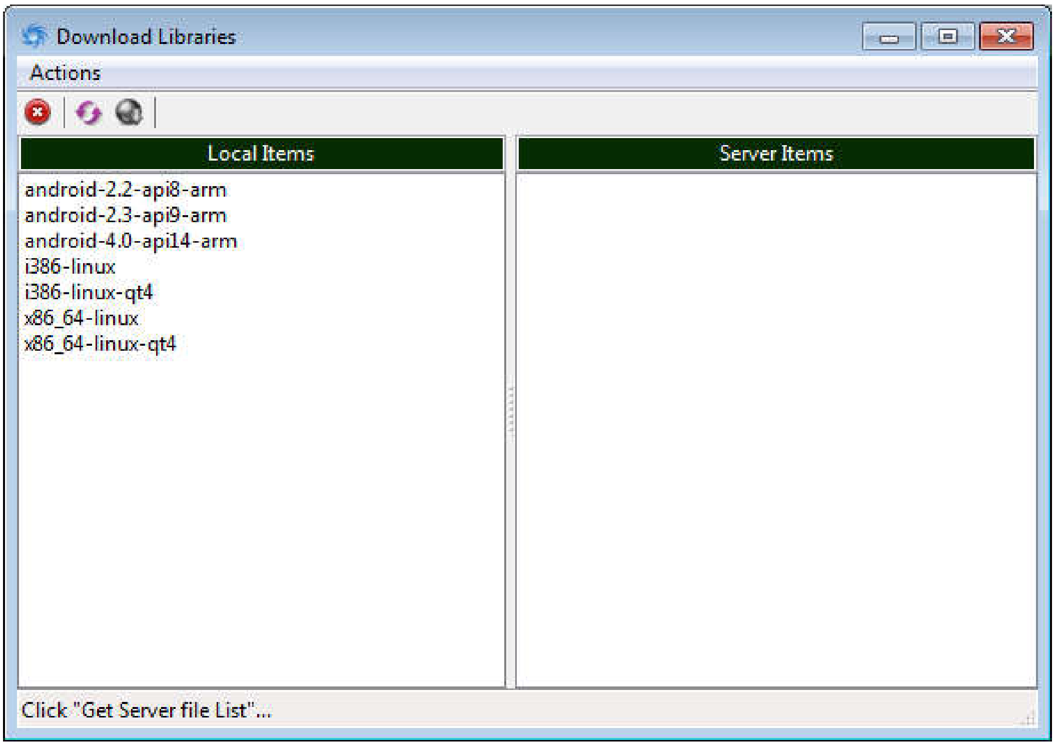
```
Host Computer
  CT Settings
    Use Platform (widget): Win32/64
    Use Multiarch Mode: True
    FreePascal Stop Before Install: False
    TyphonIDE Build Tools: True
    Cross Toolchains Engine: Disabled
    Cross FPC Elements Engine: Enabled
  All CT Stored Files
  Help Library (3)
  OSes Libraries (7)
  Toolchains (16)
  Toolchains Engine
  CodeOcean
  Free Pascal Compiler
    FPC for Win64
    FPC for Win32
      Cross element for arm-android
      Cross element for arm-gba
      Cross element for arm-linux
      Cross element for arm-nds
      Cross element for arm-wince
      Cross element for i386-android
      Cross element for i386-linux
      Cross element for x86_64-linux
      Cross element for x86_64-win64
  GDB Debugger
    GDB for Win64
    GDB for Win32
    win32 Cross GDB for arm-gba
    win32 Cross GDB for arm-nds
    win32 Cross GDB for arm-wince
```

```
>>> Ready <<<  CTC for: x86_64-win64, Platform (widget):Win32/64
```

Next step is to setup Typhon32 cross compilers.

Goto Menu/Cross Build/FreePascal 32bits/FPC32 Build Cross Element All and wait for program to finish (1 to 2 hours)

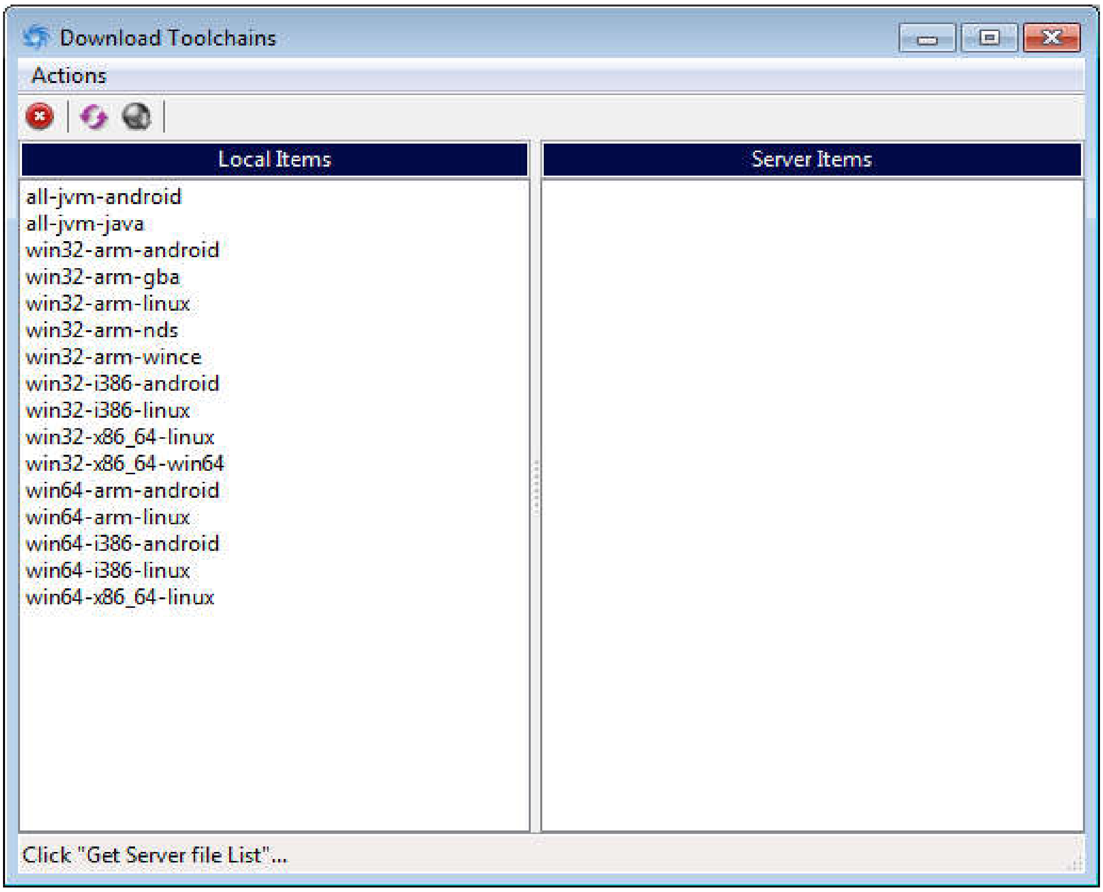
Next is to download neccessery libraries. Goto to Menu/Cross Build/Download Libraries. Then refresh button and choose i386-linux, i386-linuxqt4, x86_64-linux,x86_64-linux-qt4. After program finish you get your libraries in directories under c:\codetyphon\binLibraries\.



android-2.2-api8-arm
android-2.3-api9-arm
android-4.0-api14-arm
i386-linux
i386-linux-qt4
x86_64-linux
x86_64-linux-qt4

Click "Get Server file List"...

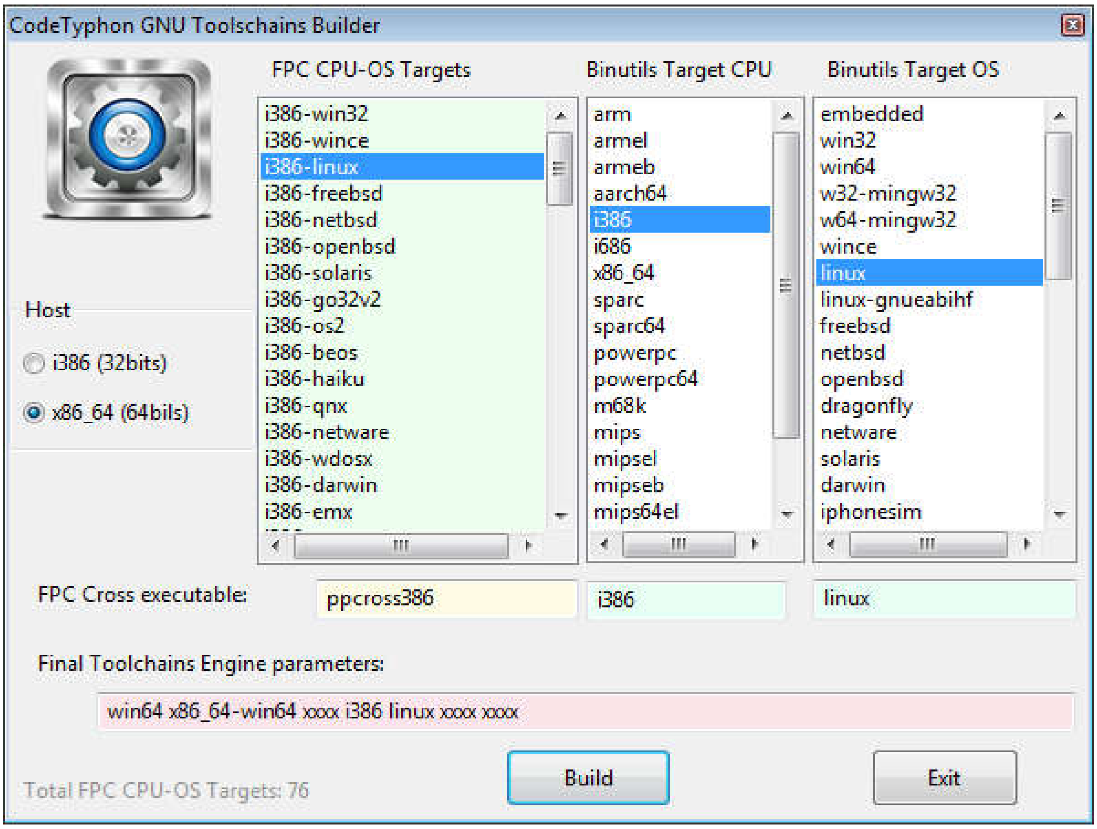
Now we need toolchain. Goto to Menu/Cross Build/Download Toolchains



all-jvm-android
all-jvm-java
win32-arm-android
win32-arm-gba
win32-arm-linux
win32-arm-nds
win32-arm-wince
win32-i386-android
win32-i386-linux
win32-x86_64-linux
win32-x86_64-win64
win64-arm-android
win64-arm-linux
win64-i386-android
win64-i386-linux
win64-x86_64-linux

Click "Get Server file List"...

After that you need to build toolchains.Goto to Menu/Cross Build/Toolchain Builder and choose your build configuration



CodeTyphon GNU Toolschains Builder

Host

○ i386 (32bits)

● x86_64 (64bils)

FPC CPU-OS Targets: i386-linux

Binutils Target CPU: i386

Binutils Target OS: linux

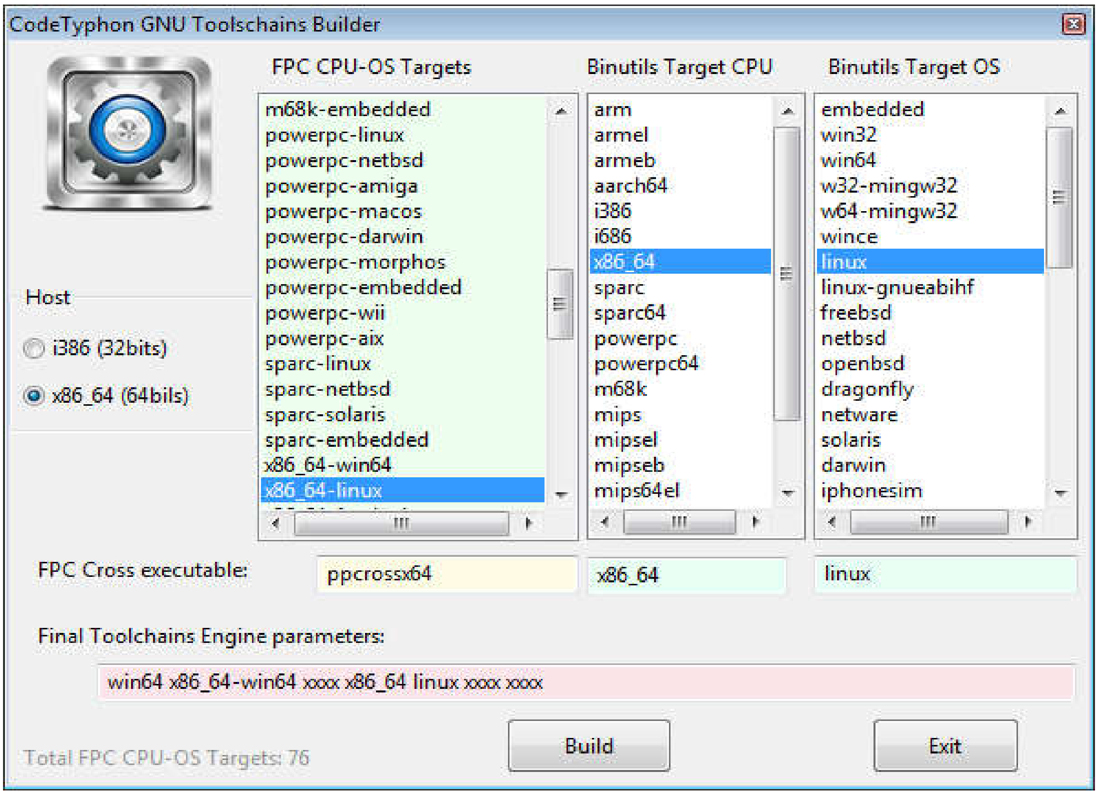
FPC Cross executable: ppcross386 | i386 | linux

Final Toolchains Engine parameters:

win64 x86_64-win64 xxxx i386 linux xxxx xxxx

Total FPC CPU-OS Targets: 76

We need "i386-linux and i386 and linux" and "x86_64-linux and x86_64 and linux"



CodeTyphon GNU Toolschains Builder

Host

○ i386 (32bits)

● x86_64 (64bils)

FPC CPU-OS Targets: x86_64-linux

Binutils Target CPU: x86_64

Binutils Target OS: linux

FPC Cross executable: ppcrossx64 | x86_64 | linux

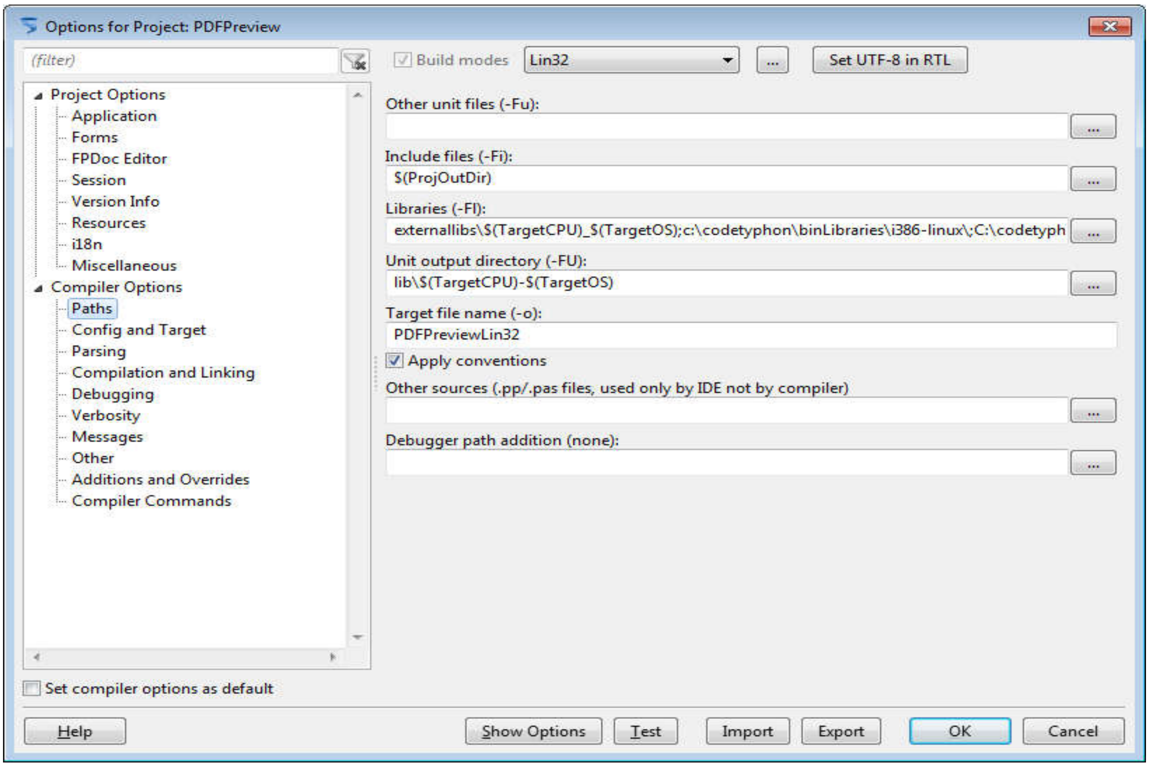
Final Toolchains Engine parameters:

win64 x86_64-win64 xxxx x86_64 linux xxxx xxxx

Total FPC CPU-OS Targets: 76

Click to build selected configuration one by one.

That is it. Now you can cross compile project, but for every project you have to create build configuration. Go to Project properties and duplicate default configuration and set operating system, processor type, put location to libraries, add location to mupdf extra libraries, choose widget (for linux is gtk2 or qt4). Check the pictures for linux 32. Turn off deugging to produce smaller executables.



Options for Project: PDFPreview

☑ Build modes: Lin32

Other unit files (-Fu):

Include files (-Fi): $(ProjOutDir)

Libraries (-Fl): externallibs\$(TargetCPU)_$(TargetOS);c:\codetyphon\binLibraries\i386-linux\;C:\codetyph

Unit output directory (-FU): lib\$(TargetCPU)-$(TargetOS)

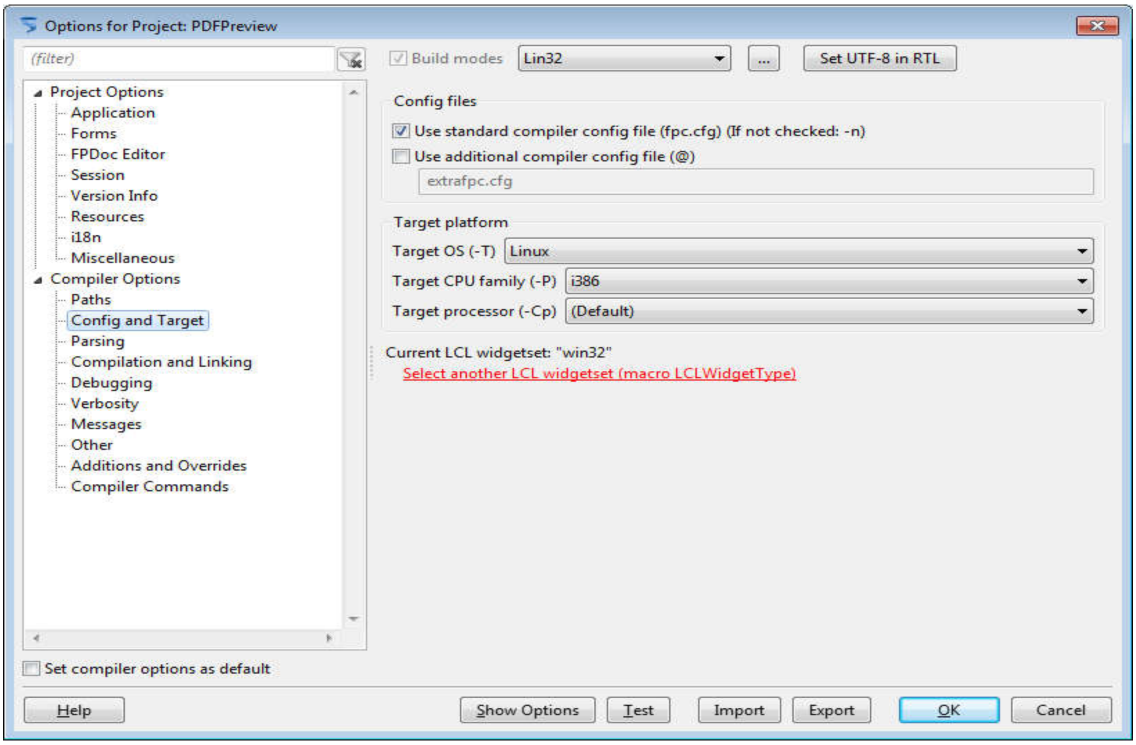
Target file name (-o): PDFPreviewLin32

☑ Apply conventions

Other sources (.pp/.pas files, used only by IDE not by compiler)

Debugger path addition (none):

□ Set compiler options as default



Options for Project: PDFPreview

☑ Build modes: Lin32

Config files

☑ Use standard compiler config file (fpc.cfg) (If not checked: -n)

□ Use additional compiler config file (@)

extrafpc.cfg

Target platform

Target OS (-T): Linux

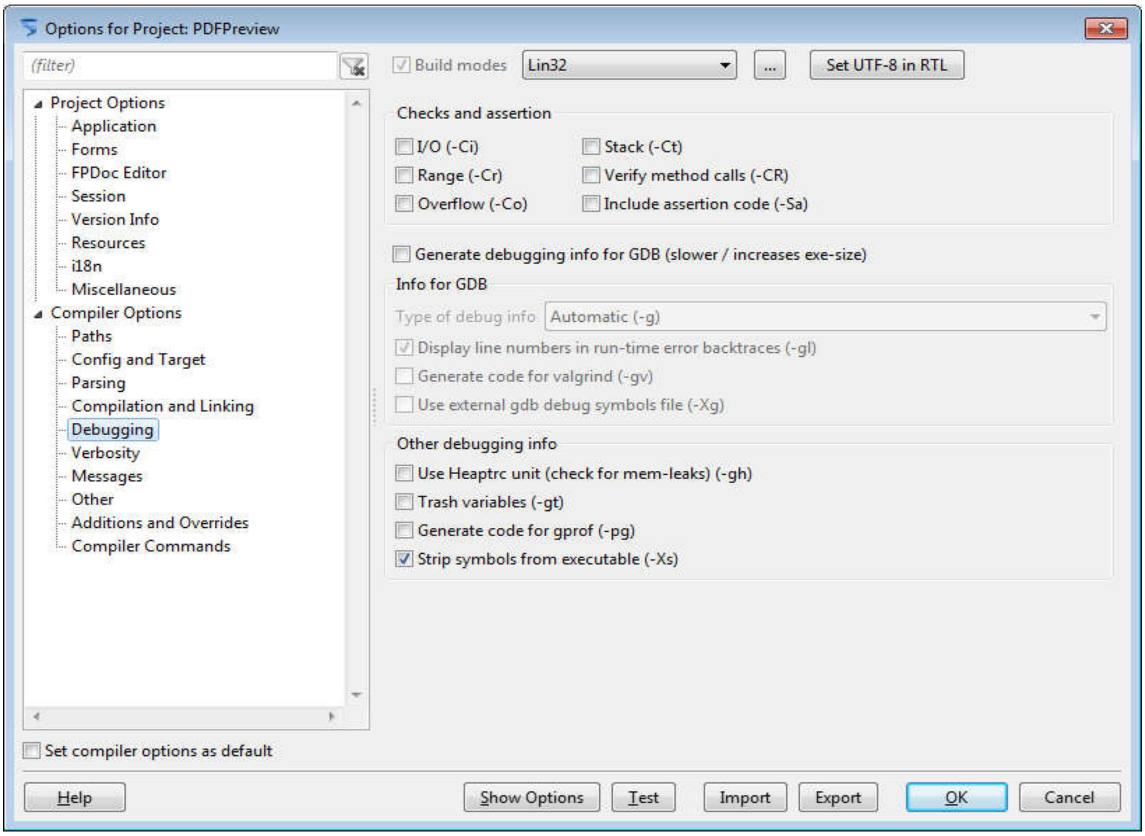
Target CPU family (-P): i386

Target processor (-Cp): (Default)

Current LCL widgetset: "win32"

Select another LCL widgetset (macro LCLWidgetType)

□ Set compiler options as default



☑ Build modes Lin32 ... Set UTF-8 in RTL

Checks and assertion

□ I/O (-Ci) □ Stack (-Ct)

□ Range (-Cr) □ Verify method calls (-CR)

□ Overflow (-Co) □ Include assertion code (-Sa)

□ Generate debugging info for GDB (slower / increases exe-size)

Info for GDB

Type of debug info Automatic (-g)

☑ Display line numbers in run-time error backtraces (-gl)

□ Generate code for valgrind (-gv)

□ Use external gdb debug symbols file (-Xg)

Other debugging info

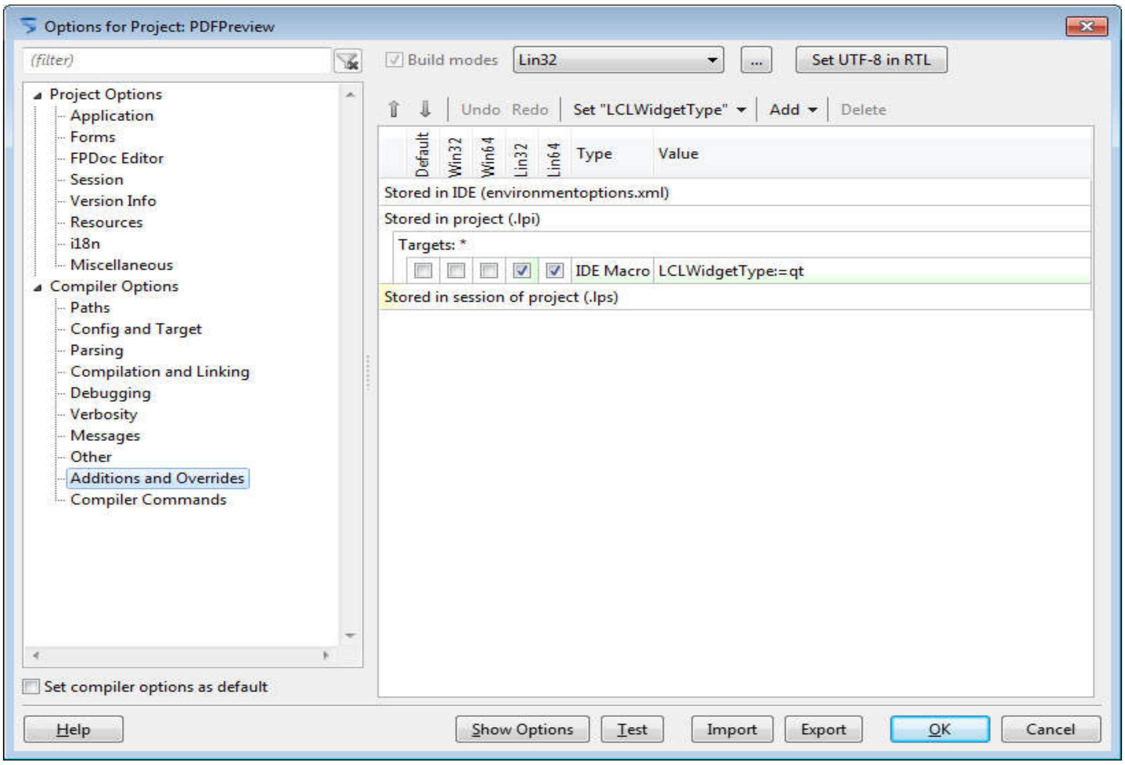
□ Use Heaptrc unit (check for mem-leaks) (-gh)

□ Trash variables (-gt)

□ Generate code for gprof (-pg)

☑ Strip symbols from executable (-Xs)

□ Set compiler options as default



☑ Build modes Lin32 ... Set UTF-8 in RTL

Default	Win32	Win64	Lin32	Lin64	Type	Value
Stored in IDE (environmentoptions.xml)						
Stored in project (.lpi)						
Targets: *						
□	□	□	☑	☑	IDE Macro	LCLWidgetType:=qt
Stored in session of project (.lps)						

□ Set compiler options as default

Note linking order is important. So this library path is important

externallibs\$(TargetCPU)_$(TargetOS);c:\codetyphon\binLibraries\i386-linux\;C:\codetyphon\binLibraries\i386-linux-qt4\

Also compiler comands like

{$linklib m}, {$linklib libcurl.a} and

{$L g:\dev\mupdf\PDFPreview/externallibs/i386_linux/libgcc_s-5.3.1-20151207.so.1}

have different meaning.

Meanings:

{$linklib m} means libm standard linux library

{$linklib libcurl.a} means find library in libcurl.a in current library path (externallibs\$(TargetCPU)_$(TargetOS) defined by library path in Path options or Project Properties

{$L g:\dev\mupdf\PDFPreview/externallibs/i386_linux/libgcc_s-5.3.1-20151207.so.1} means that compiler must link static library function from exact path location.

Good refrence for linking is this url:

http://www.math.uni-leipzig.de/pool/tuts/FreePascal/prog/node6.html

About

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