Release Notes V4.8.0

2010 12 02

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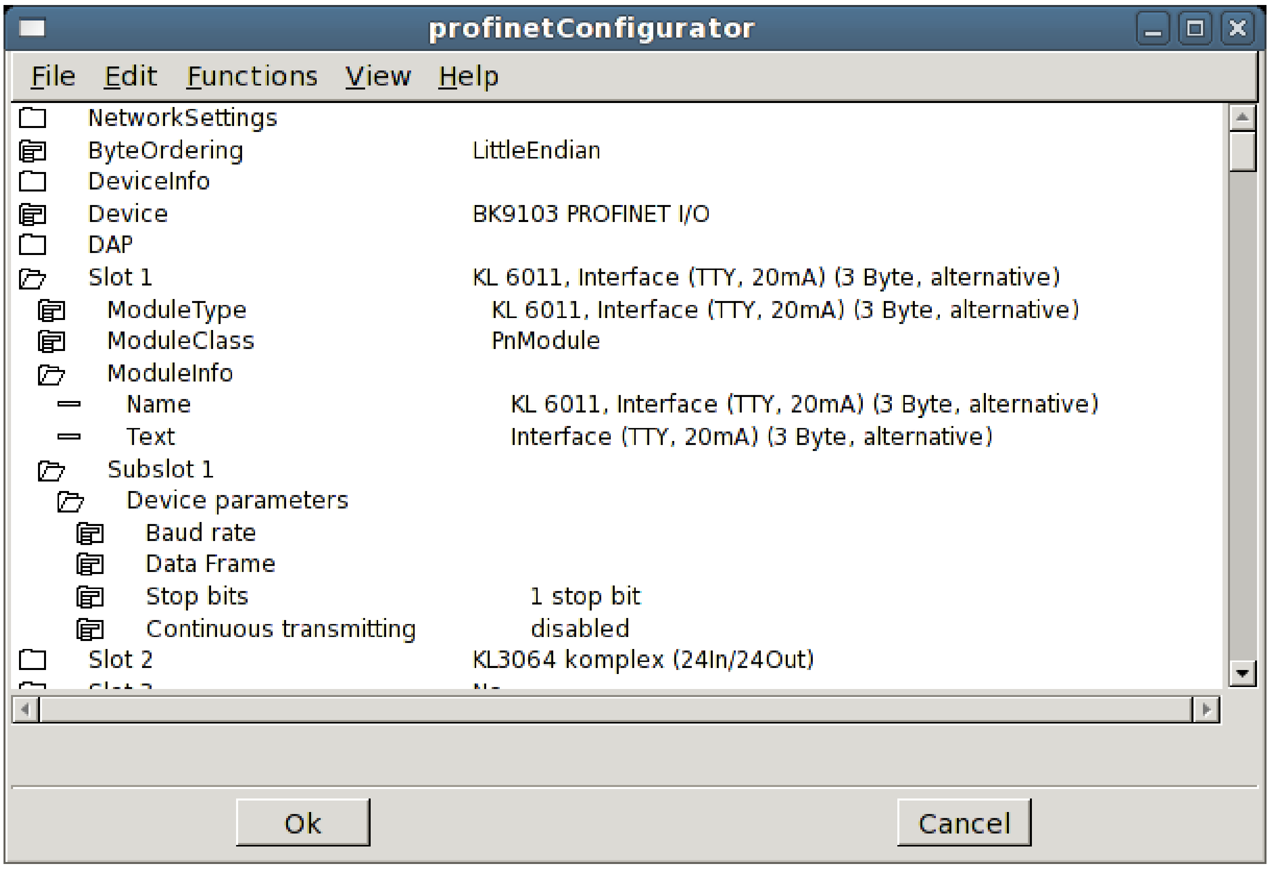
Upgrading to Proview V4.8.0

This document describes new functions i Proview V4.8.0, and how to upgrade a project from V4.7.0 to V4.8.0.

New functions

Profinet

An interface to the Softing profinet stack PNAK is implemented in V4.8. Also an Profinet configurator using the gsdml configuration files is added. Also, using the same Profinet stack, there exist a new tool for identifying devices on a Profinet network and function to set name and ip-address for the repective devices. Read more about how th use the Profinet interface in ”*Guide to I/O system*”.



```
NetworkSettings
ByteOrdering                    LittleEndian
DeviceInfo
Device                          BK9103 PROFINET I/O
DAP
Slot 1                          KL 6011, Interface (TTY, 20mA) (3 Byte, alternative)
  ModuleType                      KL 6011, Interface (TTY, 20mA) (3 Byte, alternative)
  ModuleClass                     PnModule
  ModuleInfo
    Name                            KL 6011, Interface (TTY, 20mA) (3 Byte, alternative)
    Text                            Interface (TTY, 20mA) (3 Byte, alternative)
  Subslot 1
    Device parameters
      Baud rate
      Data Frame
      Stop bits                       1 stop bit
      Continuous transmitting         disabled
Slot 2                          KL3064 komplex (24In/24Out)
```

Fig The Profinet configurator

Web interface

– Language support is added to the Web interface.

– Method buttons in object graph added.

– Object graphs updated.

Velleman K8055 experiment board

Velleman K8055 is an USB experiment board with 2 Ai, 5 Di, 8 Do and 2 Ao. It is can be purchased as a kit, K8055, or as an assembled board, VM110. The card can be used to test Proview with some simple application.

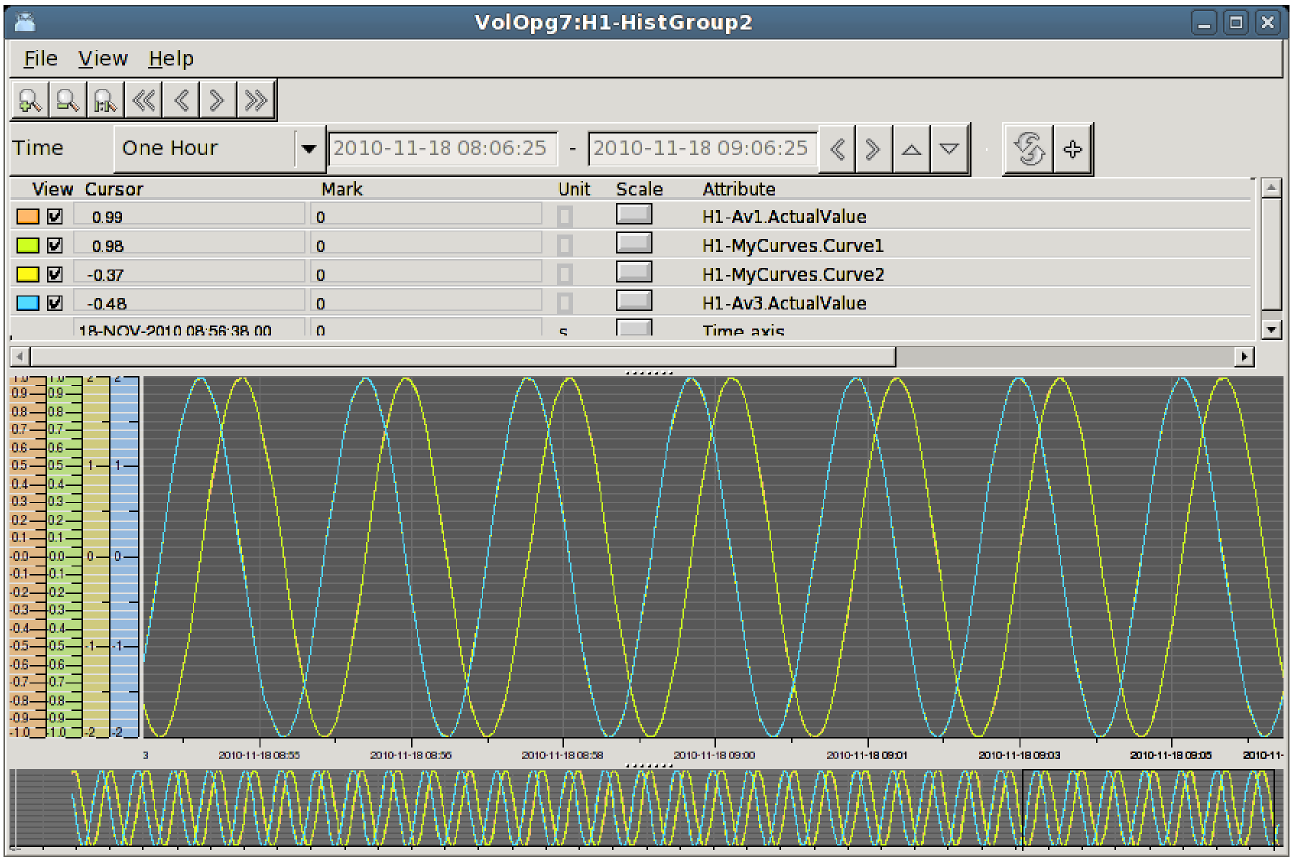
The board is configured with the objects USB_Agent, Velleman_K8055 and K8055_Board. See Guide to I/O System for more info.

History curve window

The curve window for process history has a new toolbar to choose time interval.

It is also possible view curves for several stored attributes, either by configuring a PlotGroup object containing references to a number of SevHist objects, or by adding curves to a curve window.

You add a curve by selecting the signal, or SevHist object in the navigator and press the '+' button.



Time One Hour 2010-11-18 08:06:25 - 2010-11-18 09:06:25

View		Cursor	Mark	Unit	Scale	Attribute
🟧	☑	0.99	0			H1-Av1.ActualValue
🟩	☑	0.98	0			H1-MyCurves.Curve1
🟨	☑	-0.37	0			H1-MyCurves.Curve2
🟦	☑	-0.48	0			H1-Av3.ActualValue
		18-NOV-2010 08:56:38.00	0	s		Time axis

Fig History curve window with multiple curves

Xtt logging condition

The condition property of the Xtt logging function can contain an expression where values of database attributes are fetched by the GetD, GetA and GetI functions for digital, analog and integer attributes respectively, e.g

```
expr( GetD("H1-Dv1.ActualValue") && GetA("H1-Av3.ActualValue") > -0.8)
```

Operator log

Operator actions can be logged to file.

The logging is started with the xtt command 'oplog start' and the default log file is

$pwrp_log/xtt.log. The logging is stopped with the command 'oplog stop' .

A log file can be played, i.e. all actions in the file are executed, with the command 'oplog play'.

Xtt commands

oplog

New command to handle operator log.

xtt> oplog start [/file=]	Start the logging.
xtt> oplog stop	Stop the logging.
xtt> oplog play [/file=] [/speed=]	Execute logged actions.

UTF-8 coded translation tables and help file texts

It is possible to write UTF-8 coded translations tables and help file texts by adding the 'Coding:UTF-8' tag on the first line. This will make it possible to create translated versions of the operator environment to most languages. A translation to chinese (zh_cn) is planned to the next release.

Embedded Linux

Support to build Proview for embedded Linux with cross compilation is added to V4.8.0. See Appendix A.

ARM architecture

Build files for ARM are added to the runtime module. To build for ARM see Appendix A.

Mac OS X

Proview can be built on Mac OS X 10.6 on x86_64 by using fink. See Appendix B for more info.

New Classes

PnControllerSoftingPNAK

I/O Agent object configuring the Softing Profinet stack PNAC.

PnDevice

I/O Rack object configuring a Profinet device. The device is configured by the Profinet configurator opened from the ConfigureDevice method.

PnModule

I/O Card object configuring a Profinet module. The module objects are created by the Profinet configurator.

Siemens_ET200S_PnDevice

Device object for a Siemens ET200S.

Siemens_ET200M_PnDevice

Device object for a Siemens ET200M.

Sinamics_G120_PnDevice

Device object for a Sinamics G120 drive.

ABB_ACS_PnDevice

Device object for a ABB ACS800 drive with RETA-02 interface (profinet).

BaseFcPPO5IoModule

Generic I/O Bus module object for PPO5. Contains the Channels for the communication and should be an attribute object of the module object for the IO bus system.

BaseFcPPO3IoModule

Generic I/O Bus module object for PPO3 / Standard telegram 1. Contains the Channels for the communication and should be an attribute object of the module object for the IO bus system.

BaseFcPPO3PnModule

Module object for a drive using Standard Telegram 1 / PPO3. The Io-attribute of this object can be directly connected to a drive object of type BaseFcPPO3 in the $PlantHier. This one in turn can be connected to a function object in a plc-program of type BaseFcPPO3Fo.

Sinamics_Tgm1_PnModule

Module object for a drive using Standard Telegram 1. The Io-attribute of this object can be directly connected to a drive object of type Sinamics_G120_Tgm1 in the $PlantHier. This one in turn can be connected to a function object in a plc-program of type Sinamics_G120_Tgm1Fo.

Siemens_Ai2_PnModule

Module object for a Siemens ET200 module with 2 analog inputs.

Siemens_Ao2_PnModule

Module object for a Siemens ET200 module with 2 analog outputs.

Siemens_Di4_PnModule

Module object for a Siemens ET200 module with 4 digital inputs.

Siemens_Di2_PnModule

Module object for a Siemens ET200 module with 2 digital inputs.

Siemens_Do4_PnModule

Module object for a Siemens ET200M module with 4 digital outputs.

Siemens_Do2_PnModule

Module object for a Siemens ET200 module with 2 digital outputs.

Siemens_Do32_PnModule

Module object for a Siemens ET200 module with 32 digital outputs.

Siemens_D16_PnModule

Module object for a Siemens ET200 module with 16 digital outputs.

Siemens_Do8_PnModule

Module object for a Siemens ET200 module with 8 digital outputs.

Siemens_Di32_PnModule

Module object for a Siemens ET200 module with 32 digital inputs.

Siemens_Di16_PnModule

Module object for a Siemens ET200 module with 16 digital inputs.

Siemens_Di8_PnModule

Module object for a Siemens ET200 module with 8 digital outputs.

Siemens_Dx16_PnModule

Module object for a Siemens ET200 module with 16 digital outputs and 16 digital inputs.

Siemens_Ai8_PnModule

Module object for a Siemens ET200 module with 8 analog inputs.

Siemens_Ao8_PnModule

Module object for a Siemens ET200 module with 8 analog outputs.

Siemens_Ai4_PnModule

Module object for a Siemens ET200 module with 4 analog inputs.

Siemens_Ao4_PnModule

Module object for a Siemens ET200 module with 4 analog outputs.

Sinamics_G120_Tgm1

Class representing a G120 drive using Standard telegram 1. The I/O can be directly connected to a BaseFcPPO3IoModule.

Sinamics_G120_Tgm1Fo

Function object working on a Sinamics _G120_Tgm1 drive object. Connect drive to function object with the connect method.

GPIO

I/O Rack object configuring GPIO, General Purpos I/O.

GPIO_Module

I/O Card object configuring GPIO.

OneWire

I/O Rack object configuring the Maxim 1-wire bus.

Maxim_DS18B20

I/O object configuring the Maxim DS18B20 temperature sensor on the 1-wire bus.

USB_Agent

I/O Agent object initializing libusb for attachment of USB devices.

Velleman_K8055

I/O Rack object for Velleman K8055 experiment board.

Velleman_K8055_Board

I/O Card object for Velleman K8055 experiment board.

Modified Classes

BaseFcPPO5PbModule

The internal channels are moved to an internal BaseFcPPO5IoModule attribute object.

BaseFcPPO3PbModule

The internal channels are moved to an internal BaseFcPPO3IoModule attribute object.

BaseFcPPO3

Added attributes for Status Word and Control Word as bitmasks.

Upgrade procedure

The upgrading has to be done from any version in the interval V4.7.0. If the project has a lower version, the upgrade has to be performed stepwise following the schema

V2.1 -> V2.7b -> V3.3 -> V3.4b -> V4.0.0 -> V4.1.3 ->V4.2.0->V4.5.0->V4.6.0->V4.7.0->V4.8.0

The upgrade procedure is to dump the database with reload.sh, change the version of the project in the projectlist, and then execute the script upgrade.sh.

NOTE !!

Do not activate Update Classes.

If the previous version should be kept, first make a copy of the project.

Make a copy of the project

Do `sdf` to the project and start the administrator

```
> pwra
```

Now the Projectlist is opened. Enter edit mode, login as administrator if you lack access. Find the current project and select Copy Project from the popup menu of the ProjectReg object. Open the copy and assign a suitable project name and path. Save and close the administrator.

Dump the databases

Execute the first pass, *dumpdb*, in the script *`reload.sh`*.

```
> reload.sh

  reload.sh    Dump and reload of database.

  Arguments    Database or databases to reload.
               I no arguments is supplied, all databases will be
              reloaded.

  Pass
```

```
    dumpdb       Dump database to textfile $pwrp_db/'volume'.wb_dmp
    classvolumes Create structfiles and loadfiles for classvolumes
    renamedb     Rename the old database
    dirvolume    Load directory volume
    loaddb       Load the dump into the new database
    compile      Compile all plcprograms in the database
    createload   Create new loadfiles.
    createboot   Create bootfiles for all nodes in the project.


-- Reloading volume  directory volopg2

Pass: dumpdb classvolumes renamedb dirvolume loaddb compile createload
createboot

Enter start pass [dumpdb] >

------------------------------------------------------------------------
 Pass dump database
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
ls: cannot access /data0/pwrp/opg2/common/db/*.wb_dmp: No such file or
directory
Dumping volume directory in /data0/pwrp/opg2/common/db/directory.wb_dmp
...
I Database opened /data0/pwrp/opg2/common/db/volopg2.db
ls: cannot access /data0/pwrp/opg2/common/db/*.wb_load: No such file or
directory



------------------------------------------------------------------------
 Pass create structfiles and loadfiles for classvolumes
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] n
setdb is obsolete
>
```

Check that the one dumpfile is create for the directory volume and one for every other rootvolume

```
> cd $pwrp_db
> ls -l *.wb_dmp
-rw-rw-r-- 1 cs pwrp 1771 2010-03-26 16:32 directory.wb_dmp
-rw-rw-r-- 1 cs pwrp 7467 2010-03-26 16:32 volopg2.wb_dmp
```

Linux release upgrade

If you are using Ubuntu 9.4 or Fedora 10 you need to upgrade the linux release and install the pwr47 package.

Change version

Enter the administrator and change the version of the project to V4.8.0. Save and close the administrator.

upgrade.sh

Do `sdf` to the project.

upgrade.sh is a script that is divided into a number of passes. After each pass you you have to answere whether to continue with the next pass or not.
Start the script with

```
> upgrade.sh
```

Start from the classvolumes pass.

```
Enter start pass [classvolumes] >
```

classvolumes

Create loadfiles and structfiles for the class volumes.

renamedb

Store the old databases under the name `$pwrp_db/'volumename'.db.1.`

cnvdump

Converts values of Profibus module objects.

loaddb

Create databases and load the dumpfiles into them.

compile

Compile all the plc programs.

createload

Create loadfiles for the root volumes.

createboot

Create bootfiles for all nodes in the project.

If the project contains any application programs, these has to be built manually.

Delete files from the upgrading procedure:

`$pwrp_db/*.wb_dmp.*`
`$pwrp_db/*.db.1` (old databases, directories which content also should be removed)

List example

```
>
> sdf opg2
```

```
Setting base /data0/x4-7-1/rls
bash: cd: /data0/pwrp/opg2/src/login: No such file or directory
>
> upgrade.sh

  upgrade.sh  Upgrade from V4.7.0 to V4.8.0


  Pass

    classvolumes   Create loadfiles for classvolumes.
    renamedb       Rename old databases.
    loaddb         Load dumpfiles.
    Cnvdump        Convert the dumpfiles.
    compile        Compile all plcprograms in the database
    createload     Create new loadfiles.
    createboot     Create bootfiles for all nodes in the project.


-- Upgrade opg2

Enter start pass [classvolumes] >

------------------------------------------------------------------------
Pass create structfiles and loadfiles for classvolumes
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
ls: cannot access /data0/pwrp/opg2/src/db/*.wb_load: No such file or
directory

------------------------------------------------------------------------
Pass rename old databases
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
-- Saving file /data0/pwrp/opg2/src/db/directory.db ->
/data0/pwrp/opg2/src/db/directory.db.1
-- Saving file /data0/pwrp/opg2/src/db/volopg.db ->
/data0/pwrp/opg2/src/db/volopg.db.1

------------------------------------------------------------------------
Pass cnvdump
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
/data0/pwrp/opg4/src/db/volopg2.wb_dmp

------------------------------------------------------------------------
Pass load database
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
-- Loading volume volopg
...
-- Processing line: 57
-- Building volume directory
I Volume directory loaded
I Database opened /data0/pwrp/opg2/src/db/directory.wb_load
-- Processing line: 200
-- Building volume VolOpg
```

```
I Volume VolOpg loaded
Berkeley DB 4.6.21: (September 27, 2007)
info put: 0
Berkeley DB 4.6.21: (September 27, 2007)
info get: 0
int rc =  m_txn->abort(): 0

------------------------------------------------------------------------
Pass compile plcprograms
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
...
Berkeley DB 4.6.21: (September 27, 2007)
info get: 0
I Database opened /data0/pwrp/opg2/src/db/volopg.db
-- Plc window generated            F1-Z1-Plc-W
-- Plc window compiled for x86_linux optimized -O3 F1-Z1-Plc-W
-- Plc plcpgm compiled for x86_linux optimized -O3 F1-Z1-Plc
-- Plc window generated            F1-Z2-Plc-W
-- Plc window compiled for x86_linux optimized -O3 F1-Z2-Plc-W
-- Plc plcpgm compiled for x86_linux optimized -O3 F1-Z2-Plc

------------------------------------------------------------------------
Pass create loadfiles
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
-- Removing old loadfiles
rm: cannot remove `/data0/pwrp/opg2/bld/common/load/ld_vol*.dat': No
such file or directory
...
Berkeley DB 4.6.21: (September 27, 2007)
info get: 0
I Database opened /data0/pwrp/opg2/src/db/volopg.db
-- Building archive for volume: 000_001_001_012
-- Archive built for volume: 000_001_001_012

-- Working with load file volume 'VolOpg'...
-- Open file...
-- Successfully created load file for volume 'VolOpg'
-- 26 objects with a total body size of 21976 bytes were written to new
file.

Before this pass you should compile the modules included by ra_plc_user.


------------------------------------------------------------------------
Pass create bootfiles
------------------------------------------------------------------------
Do you want to continue ? [y/n/go] y
-- Creating bootfiles for all nodes

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You can redistribute it and/or modify it under the terms of this
license.

Proview is distributed in the hope that it will be useful
but WITHOUT ANY WARRANTY; without even the implied warranty of
```

```
MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
GNU General Public License for more details.

-- Creating bootfile for node opg
      plc_opg_0507_00011
-- Plc thread generated priority 0, scantime   0.10000 s, 2 plcpgm's
-- Plc process compiled for x86_linux optimized -O3 Dummy
-- Plc program linked for x86_linux  node plc_opg_0507
-- Creating bootfile for node aristotle
      plc_aristotle_0517_00011
-- Plc thread generated priority 0, scantime   0.10000 s, 2 plcpgm's
-- Plc process compiled for x86_linux optimized -O3 Dummy
-- Plc program linked for x86_linux  node plc_aristotle_0517

-- The upgrade procedure is now accomplished.

setdb is obsolete
>
>
```

Appendix A Embedded Linux

Proview is adapted to be built for embedded Linux systems with cross compilation in a Linux host environment.

First the Proview runtime module of the base system has to be built, and then a project is created where also the plc executable is built with cross compilation. The following example will describe a build for the ARM architecture with the cross compilation tools arm-linux-gnueabi-gcc, arm-linux-gnueabi-g++ and arm-linux-gnueabi-ar.

The runtime module build is dependent on an development installation or a complete build on the host system. Platform independent files as loadfiles and java archives are copied from the host release to the embedded build tree, also build tools in the host release are used to perform the build.

Environment variables defining the cross compilation tools, and the path to the exe directory of the host release has to be defined before starting the build.

```
export pwre_cc=arm-linux-gnueabi-gcc
export pwre_cxx=arm-linux-gnueabi-g++
export pwre_ar=arm-linux-gnueabi-ar
export pwre_host_exe=/usr/pwr47/os_linux/hw_x86/exp/exe
```

The tool to build Proview from sources, pwre, also has to be initialized

```
export pwre_env_db=~/pwre_env_db
export pwre_bin=~/pwrsrc_4.7.1/src/tools/pwre/src/os_linux
source $pwre_bin/pwre_function
```

Follow the Build from sources guide to build from the source code with the following modifications.

When adding the pwre environment, state the import root to the hw directory of the host release

```
Import root:  /usr/pwr47/os_linux/hw_x86
```

and set hardware to arm.

```
Hardware: arm

> pwre add armx471
 Source root []? /home/pwrd/pwrsrc_4.7.1/src
 Import root []? /usr/pwr47/os_linux/hw_x86
 Build root  []? /home/pwrd/pwrrls_4.7.1
 Build type  [dbg]?
 OS          [linux]?
 Hardware    []? arm
 Description []? X4.7.1 for ARM
```

Initialize the arm environment

```
> pwre init armx471
```

Create the build tree

```
> pwre create_all_modules
```

Import files from the import release

```
> pwre import rt
```

If the java archives are to be a part of the release these can be imported with the command

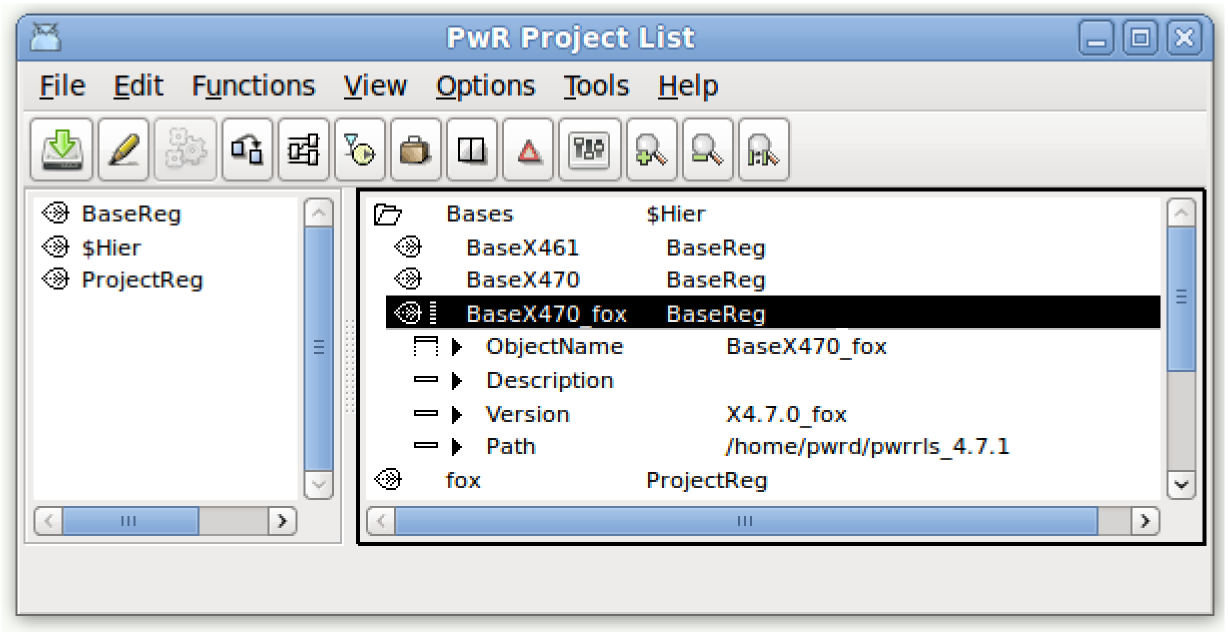
```
> pwre import java
```

Build the runtime module. If you want to customize the build you can choose what additional modules you want to build in the file $pwre_bin/ebuild.dat

```
> pwre ebuild rt
```

When the build is performed, create the /usr/pwrrt/exe, /usr/pwrrt/load directories in the embedded file system and copy the rt_ files to the exe directory, and .dbs -files to load directory.

Define the embedded release in the project list with a BaseReg object and insert to path to the release.



```
Bases            $Hier
  BaseX461         BaseReg
  BaseX470         BaseReg
  BaseX470_fox     BaseReg
    ObjectName         BaseX470_fox
    Description
    Version            X4.7.0_fox
    Path               /home/pwrd/pwrrls_4.7.1
fox              ProjectReg
```

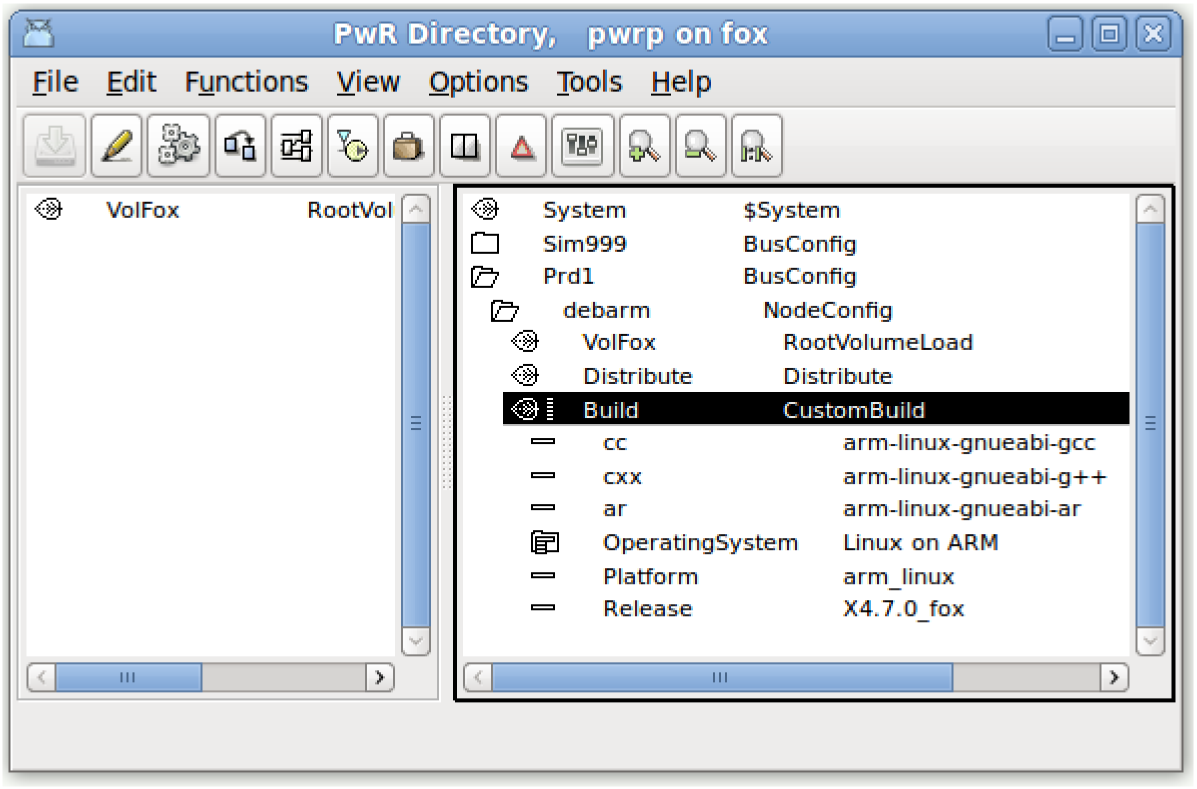
Project

The project is created and developed and simulated in the host release environment.

Set the OperatingSystem of the NodeConfig object for the embedded node in the directory volume to CustomBuild.

Create CustomBuild object below the NodeConfig object, that points out the embedded release and platform, and that defines the embedded toolchain.

The CustomBuild object will create a script, $pwp_exe/custom_build.sh that sets up the embedded build environment. If you need to make additional changes you can remove CustomBuild object and insert the changes in custom_build.sh.



```
VolFox            RootVol

System            $System
Sim999            BusConfig
Prd1              BusConfig
  debarm            NodeConfig
    VolFox            RootVolumeLoad
    Distribute        Distribute
    Build             CustomBuild
      cc                arm-linux-gnueabi-gcc
      cxx               arm-linux-gnueabi-g++
      ar                arm-linux-gnueabi-ar
      OperatingSystem   Linux on ARM
      Platform          arm_linux
      Release           X4.7.0_fox
```

Installing Proview

The following directories should be created in the root files system and the following files should be copied to them.

Proview runtime

`/etc`
Copied from $pwre_croot/src/tools/bld/pkg/deb/pwrrt

```
pwrp_profile
proview.cnf
```

`/usr/pwrp/adm/db/`
Copied from $pwra_db

```
pwr_user2.dat
```

`/usr/pwrrt/exe`
Copied from $pwr_exe (/home/pwrd/pwrrls_4.7.1/os_linux/hw_arm/rt/exe)

```
pwr_pkg.sh
pwr_stop.sh
rs_remote_3964r
rs_remote_logg
rs_remote_modbus
rs_remote_serial
```

```
rs_remote_tcpip
rs_remotehandler
rt_alimserver
rt_bck
rt_emon
rt_fast
rt_ini
rt_neth
rt_neth_acp
rt_print.sh
rt_prio
rt_qmon
rt_rtt
rt_sevhistmon
rt_statussrv
rt_sysmon
rt_tmon
rt_trend
rt_webmon.sh
rt_webmonelog.sh
rt_webmonmh.sh
```

`/usr/pwrrt/load`
Copied from $pwr_load

```
abb.dbs
basecomponent.dbs
inor.dbs
klocknermoeller.dbs
nmps.dbs
opc.dbs
otherio.dbs
othermanufacturer.dbs
profibus.dbs
pwrb.dbs
pwrs.dbs
remote.dbs
rt.dbs
siemens.dbs
ssabox.dbs
telemecanique.dbs
tlog.dbs
wb.dbs
```

`/usr/pwrrt/lib`
Copied from $pwr_lib

```
pwr_beans.jar
pwr_jop.jar
pwr_jopc.jar
pwr_rt.jar
pwr_rt_client.jar
```

Project

`/pwrp/common/load`
Copy from $pwrp_load

```
Loadfile ('rootvolumename'.dbs)
ld_node file (ld_node_'nodename'_'busid'.dat)
ld_boot file (ld_boot_'nodename'_'busid'.dat)
ld_appl file (ld_appl_'nodename'_'busid'.txt)
flow-files (.flw)
crossreference files (rtt_crr*_'volumeid'.dat)
```

`/pwrp/common/log`
Create only this directory if you want a log-file for system messages. Note that this might wear out you flash memory.

`/var/www`
Copy from $pwrp_web

```
*.html
pwrp_'nodename'_web.jar
```

Copy from $pwr_lib

```
pwr_rt_client.jar
pwr_jop.jar
pwr_jopc.jar
```

`/pwrp/arm_linux/exe`
Copy from $pwrp_root/bld/arm_linux/exe

```
Plc executable (plc_'nodename'_'busid'_'version')
xtt_help.dat
```

Settings

Set the Qcom busid in /etc/proview.cnf, parameter qcomBusId.

Execute /etc/pwrp_profile in .bashrc for the root user

```
source /etc/pwrp_profile
```

Add startup-file for Proview in for example /etc/init.d. Copy from

```
$pwre_croot/src/tools/pkg/deb/pwrrt/pwr
```

Distribute

The distributor can be use to copy files to a running system. For single user system add the username to the bootnode in the NodeConfig object, e.g. root@mynode.

Appendix B Mac OS X

Build from source on Mac OS X 10.6 x86_64

Install Xcode from the installation CD, or download from
http://developer.apple.com/technologiew/xcode.html

Download fink from http://www.fink.project.org. Follow the instructions to install. Install for 64 bit (question in ./bootstrap).

Install gtk

```
> fink install gtk+2
> fink install gtk+2-dev
```

Install doxygen

```
> fink install doxygen
```

Download BerkeleyDB 4.8 from
http://www.oracle.com/technetwork/database/berkeleydb/download.
Build with

```
> cd ./build_unix
> ../dist/configure –enable-cxx
> make
> sudo make install
```

Download iconv from http://ftp.gnu.org/pub/gnu/libiconv/libiconv-1.13.1.tar.gz.
Build with ./configure, make, sudo make install.

Download Proview sourcecode and follow the Build from source guide.
To download with git, install git with

```
> fink install git
```

Before build:

```
> export PKG_CONFIG_PATH=/sw/fink/pkgconfig
> export PATH=$PATH:/sw/bin
```

Before you start Proview runtime:

Add to /etc/sysctl.conf

```
kern.sysv.shmmax=167772160
kern.sysv.shmseg=16
kern.sysv.shmall=65536
```