Tick42 RMDS Bridge for OpenMAMA

Version: 1.4

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TICK42

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1 Overview

This document describes the Open Source release 1.4 of the Tick42 OpenMAMA RMDS Bridge. It contains instructions for building from source on Windows and Linux.

Versions of this code have been used by clients of Tick42 prior to the Open Source release and we use it internally in Tick42 for a number of our own products. We welcome questions feedback and comments on the code and, of course, want to know about any problems. Please contact support@tick42.com

The goal of this development has been to enable client apps written using the OpenMAMA API to subscribe and publish data on the Thomson Reuters market data platform TREP

This version of the bridge provides

- Subscribe to L1 data (OMM MarketPrice)
- Subscribe to L2 data (OMM MarketByPrice and MarketByOrder) and build appropriate MAMDA book messages
- Post on-stream and off-stream messages containing L1 data
- Function as Interactive and Non-Interactive provider with L1 data
- Optional translation from TR field names and type to and from mama field names and types
- Mapping of TR status codes and state changes to mama status
- Streaming data and snapshots
- Support for the publisher event call-backs added to recent versions of OpenMAMA
- Support for the new dynamic bridge loading capabilities introduced with OpenMAMA 2.4

1.1 Support

This code is offered to the OpenMAMA community as-is.

While we will happily answer questions through the openmama-dev mailing list or by email to support@tick42.com we are not a charity and cannot guarantee any to answer everything immediately. We do offer a support contract that offers timely support, priority on new features and a set of enhanced features that are not available in the Open Source package

2 Dependencies

2.1 OpenMAMA

This version is built and tested with OpenMAMA versions 2.4.0 up to 6.1.0. These can be downloaded from openmama.org.

Please note that there was a breaking change in the way OpenMAMA loads middleware bridges between version 2.3 and 2.4. This version of the bridge will not work with OpenMAMA runtimes built with 2.3 or earlier.

Also note that the OpenMAMA version jump from 2.4.x to 6.1.x does not contain any significant changes. It was brought in to align the OpenMAMA versions with Enterprise MAMA versions built from the same code base.

2.2 UPA

This version is built using UPA 7.6.1.L1 .This should be obtained directly from Thomson Reuters either through a developer program or by contacting your TR rep. As well as being required for header files and libraries, the UPA documentation will help with understanding the code. The bridge libraries dynamically link to the UPA libraries.

2.3 Boost

This version uses the boost libraries version 1.54. Our experience is that later versions will *probably* be OK. Boost can be obtained from
http://www.boost.org/users/history/version_1_54_0.html

The platform notes below discuss building boost

2.4 Environment variables

On both platforms dependencies are managed through environment variables; these are described in the relevant sections.

3 Build on Windows

This release on Windows is built with Visual Studio 2012

3.1 OpenMAMA

Although the OpenMAMA release doesn't not specifically support VS2012, open the openmama.sln and allow Visual Studio to convert everything.

To build the entire OpenMAMA sopurce requires the avis and qpid-proton sdks to be installed – this is not necessary for building this bridge.

In order to build the and run the bridge and some useful test programs just a subset of OpenMAMA needs to be built. This can be achieved by doing a "Rebuild All" on the" mamalistenc", "openmamdaotomibook ticker" and the "openmamdabookticker" examples.

If you are planning on using both 32 bit and 64 bit configurations then you should build for each of these. Likewise you will probably want to build both Debug and Release versions.

The OpenMAMA build has a dependency on FLEX – this can be obtained from http://gnuwin32.sourceforge.net/packages/flex.htm

There is a post build step in the bridge build that copies the various dlls and test exe files into the project output folder.

Then set the TICK42_OPENMAMA environment variable, for example,

TICK42_OPENMAMA=D:\Dev\source\openmama-6.1.0-src

In the RMDS bridge sln there is a property sheets that defines all the necessary include paths and library paths in terms of this environment variable

3.2 UPA

Set the TICK42_UPA environment variable, for example,

TICK42_UPA=D:\Dev\Toolkits\UPA\upa7.6.1.L1.win.rrg

3.3 Boost

Set the Tick42_BOOST and TICK42_BOOST64 environment variables, for example,

TICK42_BOOST=D:\Dev\Toolkits\boost\boost_1_54_0\boost32

TICK42_BOOST64=D:\Dev\Toolkits\boost\boost_1_54_0\boost64

3.4 Build the bridge

Open tick42rmds_VS110.sln in Visual Studio 2012 and rebuild all. The property sheets will select the right versions of the OpenMAMA, UPA and Boost libraries for the configuration you have selected 32bit/64bit, Debug/Release

Whichever configuration you build, a post-build script will copy the set of OpenMAMA and UPA libraries, a mama.properties file and dictionary files to the output directory. This will provide a basic runtime environment to allow you to run the mamalistenc sample

3.5 Running the sample programs

You will need to edit the example mama.properties file – at a minimum you will need to set the hostname of the ADS that you will connect to. Please refer to the configuration guide for a complete list of all the settings

In order to run mamalistenc, open a comment prompt in the output directory and run mamalistenc,cmd <sourcename> <symbolname> . For example,

Mamalistenc.cmd IDN VOD.L

This is a simple script that sets the %WOMBAT_PATH% environment variable and passes the 2 arguments into a mamalistenc.exe command line

The OpenMAMA project provides a range of example programs in C, C++, C# and Java – please refer to the OpenMAMA documentation (and the example source code) for more details

4 Build on Linux

4.1 OS versions

Tick42 build and test on CentOS 6 x86 64bit using gcc 4.4

One of our clients has built on SUSE 11 – contact support@tick42.com for further details

4.2 OpenMAMA

The current version is based on a snapshot of the OpenMAMA source code to the 6.1.0 release make by NYSE in Sep, 2016. The 6.1.0 build process is based on scons.

Follow the build instructions in the README file that accompanies the source release. The AVIS and QPID bridge components of that release are not required for the RMDS bridge

Create an environment variable for the location of the built OpenMAMA binaries, for example

export OPENMAMA_API=/dev/OpenMAMA.6.1.0/OpenMAMA/openmama_install_6.1.0

The openmama_install_6.1.0 directory is the default location where scons output is generated

Create an environment variable for the location of the OpenMAMA source code. For example:

export TICK42_OPENMAMA=/dev/OpenMAMA.6.1.0/OpenMAMA

This is used for include paths and library paths by the bridge build process

4.3 CMake

Upgrade, install or build CMake to version 2.8.11 and ensure the binary location is added to the path.

For example:
export PATH=$PATH:/usr/local/bin/

4.4 UPA

The UPA sdk is available from Reuters through the RDC.

Installation is simply a matter of unpacking the downloaded archive

Don't forget to run the LinuxSoLink script.

Set the TICK42_UPA environment variable to the location of the UPA library. For example:

export TICK42_UPA=$HOME/upa/upa7.6.1.L1.linux.rrg

4.5 Boost

Download, build and install the Boost libraries version 1.54.

http://www.boost.org/users/history/version_1_54_0.html

However, it is possible to build only the subset of needed libraries. Libraries that are required are - system, filesystem, date_time.

It is important to build boost to allow static linkage of boost to shared libraries. We recommend using the following to build and install boost

```
./bootstrap.sh
./bjam cxxflags=-fPIC link=static runtime-link=shared variant=release threading=multi
--build-dir=$HOME/tmp/build-boost toolset=gcc stage
```

Set the environment variable TICK42_BOOST to the root directory of include and lib directories. lib is where the built libraries should reside and include is where all the boost include files reside. For example:

export TICK42_BOOST=$HOME/boost154

4.6 UUID Support

Set the variable $TICK42_UUID to the place where uuid.h resides.

For example:

```
export TICK42_UUID=/usr/include/uuid
```

The OpenMAMA sdk install process described above will have installed uuid.

4.7 Create an environment variable for the Tick42 source

Create an environment variable $TICK42_BRIDGE for the root of the Tick42 RMDS bridge source code

For example

Export TICK42_BRIDGE=$HOME/dev/tick42/rmdsclient

4.8 Build a makefile with CMake

Create a build directory under the $TICK42_BRIDGE directory and run cmake, as the following:

mkdir build

cd build

cmake . --build ..

use CMake to prebuild the make file and then run make.

4.9 Build with Make

In the build directory run:

make

5 To run the binaries

The script *buildruntime.sh* will copy all the necessary binaries into a specified directory, for example –

./buildruntime.sh ./test

This relies on environment variables having been created as described above and assumes that everything is in the directory that has just been created.

You will need to configure a mama.properties file. The script will copy a minimal mama.properties that is sufficient to run the mamalistenc example and subscribe to a symbol. You will need it to edit the line

```
mama.tick42rmds.transport.rmds_tport.hosts=1ocalhost:14002
```

Replace localhost with the name or ip address of the server running the ADS

1. Change to the directory created above
2. Set WOMBAT_PATH to that directory, for example

   export WOMBAT_PATH=`pwd`
3. `export LD_LIBRARY_PATH=$TICK42_BOOST/stage/lib`
4. The *buildruntime.sh* will have copied all the file. As a checklist,in addition to the binaries the directory should include

   - enumtype.def
   - fieldmap.csv
   - mama.properties
   - RDMFieldDictionary
   - mama_dict.txt

The buildruntime.sh script will also copy the mamalistenc sample and a simple script to run it with some default parameters

For example

./mamalistenc.sh IDN_DEV VOD.L

NOTE – it may be necessary to…

- set the x flag on some of the .sh files
- run dos2unix on them

5.1 Environment Variables

This section summarises all the environment variables

Variable	Example setting	Explanation
TICK42_BOOST	$HOME/boost154	Extracted boost 1.54 root directory
TICK42_OPENMAMA	$HOME/OpenMAMA	OpenMAMA source code root directory
TICK42_UPA	$HOME/upa7.6.1.L1.linux.rrg	TR UPA sdk root directory
TICK42_UUID	/usr/include/uuid	Uuid.h location
TICK42_BRIDGE	$HOME/dev/tick42/rmdsclient	Location of the Tick42 RMDS bridge source code
OPENMAMA_API	/opt/openmama	OpenMAMA Install directory
WOMBAT_PATH	$HOME/wombat	Location of mama.properties file
LD_LIBRARY_PATH	`$TICK42_BOOST/stage/lib`	Search path for shared libaries