CBOE

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CBOE Application Programming Interface

Version 9.0.2

CBOE API Volume 5: Using CMi with Specific Object Request Brokers

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Programmer's Guide to using the Example programs provided with the CMi Software Development Kit and notes on using CMi with specific Object Request Brokers and Platforms.

CBOE PROPRIETARY INFORMATION

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15 July 2011

Document #[API-05]

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Change Notices

The following change notices are provided to assist users of the CMi in determining the impact of changes to their applications.

Date	Version	Description of Change
15 Jul 2011	V9.0.2	No changes
29 Apr 2011	V9.0.1	No changes
14 Jan 2011	V9.0	No changes
08 Jan 2010	V7.0	No changes
12 Aug 2009	V6.1	No changes
22 May 2009	V6.0	No changes
25 Nov 2008	V5.3	No changes
24 Sept 2008	V5.2	No changes
23 Jul 2008	V5.1	No changes
29 Feb 2008	V5.0	No changes
18 Jan 2008	V4.2.4	No changes
02 Nov 2007	V4.2.3	No changes
01 June 2007	V4.2.2	No changes
23 Feb 2007	V4.2.1	No changes
15 Dec 2006	V4.2	No changes
20 Sept 2006	V4.1	No changes
12 May 2006	V4.0	Removed support of Sun's JDK Orb and Visibroker. Added support for Tao 1.4 and JacOrb 2.2.3
06 Jan 2006	V3.2b	No updates
12 Aug 2005	V3.2	No updates
29 Jul 2005	V3.2	No changes
08 Apr 2005	V3.1a	Documentation errata
28 Feb 2005	V3.1	Various updates for directory structures and version numbers.
10 Dec 2004	V3.1	Removed the OMNI ORB and Visibroker BOA examples.
18 Jun 2004	V3.0	No change.
28 Apr 2004	V2.52	No change.
06 Feb 2004	V2.63	No change.

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Date	Version	Description of Change
31 Oct 2003	V2.62	JDK Orb changes.
29 Aug 2003	V2.61	No change.
13 Jul 2003	V2.6	Support for market linkage and stock.
08 Jul 2003	V2.51	Revisions since the last release.
14 Mar 2003	V2.5	Support for Hybrid
24 Jan 2003	V2.1	Support for Linkage P orders.
20 May 2002	V2.0.1	No change.
22 Apr 2002	V2.0	Production Release
27 Feb 2002	V2.0b	Software Development Kit Beta 2
23 Jan 2002	V2.0a	Software Development Kit Beta 1
18 May 2001	V1.0b	Added Market Data role information.
16 Mar 2001	V1.0a	Production Version – First Update. Error corrections and updated to reflect that Strategies will not be part of Version 1.0. Now includes support for C++ examples on Solaris
15 Jan 2001	V1.0	Production Version.
06 Oct 2000	V0.9	Updates to VisiBroker C++
15 Sep 2000	V0.9	Network testable version
28 Apr 2000	V0.8	Includes revisions to the CMi API since the last update. Refer to the Release Notes for full details.
30 Sep 1999	V0.5	New document. Usage of Visibroker for Java and C++ on the Microsoft Windows NT platform are presented. Usage of OrbixWeb on the Microsoft Windows NT platform is presented.

About This Document

Purpose

This document provides an overview of the CBOE Application Programming Interfaces (APIs). Concepts that are necessary to understand and use the CBOE APIs are also presented.

Intended Audience

Software developers using the CMi to develop applications that use CBOE Exchange Services.

Related Documents

Document Number	Document Description
roadmap.doc	CBOE API and CAS Document Road Map
API-01	CBOE API Volume 1: Overview and Concepts
API-02	CBOE API Volume 2: CMi Programmer's Guide to Interfaces and Operations
API-03	CBOE API Volume 3: CMi Programmer's Guide to Messages and Data Types
API-04	CBOE API Volume 4: CMi Dictionary of Attributes and Operations
API-06	CBOE API Volume 6: Connecting to the CBOE Network
API-07	CBOE API Volume 7: CBOEdirect Certification and Tesing Procedures
API-08	CBOE API Volume 8: CMi Programmer's Guide to the Market Data Express (MDX) Data Feed
CAS-01	CBOE Application Server Volume 1: Overview and Concepts
CAS-02	CBOE Application Server Volume 2: CBOE Application Server Simulator for Stand Alone Testing

Support and Questions Regarding This Document

Questions regarding this document can be directed to The Chicago Board
Options Exchange at 312.786.7300 or via e-mail: api@cboe.com.

The latest version of this document can be found at the CBOE web site
http://systems.cboe.com.

Introduction

This version of the CMi Software Developers Kit will include example programs that were built for the following platforms. Note the release schedule

Microsoft Windows NT 4.0 Service Pack 6

Platform	Availability
OmniORB 4.0.5	*Now*
Tao 1.4	*Now*
JacORB 2.2.3	*Now*
Sun JDK 1.4 ORB	*Not supported, example only*

Sun Solaris 2.6 (or later)

Platform	Availability
OmniORB 4.0.5	*Now*

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Example Programs

The example programs described in API-02 are provided in the Examples subdirectory under the CMi/SDK install directory (the default of C:\CBOE\CMi4.0 on Microsoft NT or ~/CBOE/CMi4.0 on Unix type operating systems).

CBOE provides C++ and Java examples as appropriate for Portable Object Adapter (POA) for various CORBA middleware products. The examples are as generalized as possible to run against a variety of ORB and operating system platforms as outlined in the introduction.

The directory structure for the examples is:

Docs

> Contains all the CMi documentation .pdf files.

Examples

> *Bin* Scripts that are common across orbs

>> **CmiTestPath.bat** – used by the SetPath.bat files in the orbdirectories to determine if the PATH has already been updated

>> **CmiMake.bat** – Generic Java example builder that invokes the orb specific build scripts in one of the orb subdirectories: CompileCmiIdl.bat, CompileGeneratedCode.bat, CompileExample.bat commands. Makefiles for C++ are included in the directory for that particular orb.

> *Src* Example source code

>> **Cpppoa** C++ Examples using POA
>> **Javapoa** Java Examples using POA

> *Dat* Data files used by the examples

>> **Example3OrderFile.txt** – Input for Example 3.
>> **Example6OrderFile**.txt – Input for Example 6.
>> **Example8OrderFile**.txt – Input for Example 8.
>> **Example10sessionProduct.txt –** Input for Example 10.
>> **Example13OrderFile.txt –** Input for Example 13.

> *Orb* scripts for specific orb products

>> *Jdk*
>> *Omniorb4POA*
>> *Tao14*
>> Jacorb223

IDL

> Contains all the CMi idl files.

Simulator
> Contains all the .jar files and .exe or .sh files to launch the CAS Simulator.

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Java JDK 1.4 (Sun Microsystems)/Java/Windows

NOTE: The Sun JDK ORB example is meant as a reference only. CBOE does not support the JDK ORB in production.

The JDK1.4 ORB Java examples were built using the following configuration:

> Sun JDK 1.4.2_10
> Microsoft Windows 2000 Service Pack 4

Directory structure for JDK 1.4.2_10 ORB examples:

Jdk –scripts and readme files

> **CompileCmiIdl.bat** – orb specific idl compilation script
> **CompileGeneratedCode.bat** – orb/language specific compilation script
> **CompileExample.bat** – orb/language specific compilation script
> **RunExample.bat** – orb specific script to run an example (invoked by RunExample1.bat, RunExample2.bat, etc.)
> **SetPath.bat** – Sets your PATH to include Examples\bin
> **Java** (Will be created and populated with CompileCmiIdl.bat is run)
> **classes** (Will be created and populated by CompileGeneratedCode.bat and CompileExample.bat).
> **readme.t**xt – provides specific instructions on building and running the examples for a specific ORB

First, build the examples by runing the following commands from the *jdk* directory:

> *SetPath*
> CmiMake

Next, start the CAS Simulator:

Open a separate command prompt window, change to the Simulator directory, and start the CAS Simulator by invoking CAS.bat from the Simulator directory. It's also possible to run the Simulator by running cas.bat from the Run option on the Start menu or by double-clicking it in the Windows NT Explorer.

Finally, run any one of the example programs by running:

> For example 1: RunExample example1
> For example 2: RunExample example2
> Etc.

RunExample.bat includes the CAS hostname and Port number. If you want to point the GUI to another CAS box, simply change the hostname and port in it.

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JacOrb2.2.3/Java/Windows

The **JacOrb 2.2.3 Java** examples were built using the following configuration:

> Sun JDK 1.4.2_10
> Microsoft Windows 2000 Service Pack 4
>
> **Note:** the JDK 1.4.2_10 install several of the executables including the JVM
> into the Windows System directories, so that they are automatically in your path.
> You can check the version of the JVM by typing **java -version.**

Directory structure for JacOrb2.2.3 examples:

> JacOrb223 –scripts and readme files

CompileCmiIdl.bat – orb specific idl compilation script
CompileGeneratedCode.bat – orb/language specific compilation script
CompileExample.bat – orb/language specific compilation script
RunExample.bat – orb specific script to run an example (invoked by RunExample example1)
SetPath.bat – Sets your PATH to include Examples\bin
Java (Will be created and populated with CompileCmiIdl.bat is run)
classes (Will be created and populated by CompileGeneratedCode.bat and CompileExample.bat).
readme.txt – provides specific instructions on building and running the examples for a specific ORB
idl.config – Contains the package structure to map the idl classes to.
orb.properties – sets POA threading model.
setenv.bat – sets the path to include the JacOrb files and the Java SDK.

To build the examples:

From the JDK directory run the following commands:

> SetPath
> CmiMake

To run the examples after successful compilation:

Start the CAS Simulator by invoking CAS.bat from the Simulator directory in a separate MS-DOS window, or from the Run option on the Start menu, or by opening in the Windows Explorer.

From the JacOrb223 directory run an Example, e.g. RunExample example1

RunExample.bat includes the **CAS hostname and Port number. If you want to point the GUI to another CAS box, simply change the hostname and port in it.**

Tao ORB 1.4/C++/Windows

The **Tao ORB 1.4 C**++ examples were built using the following configuration:

> Microsoft Visual C++ V6.0
> Microsoft Windows 2000 Service Pack 4

Directory structure for Tao ORB 1.4 examples:

> *tao14*–scripts and readme files

Makefile – nmake makefile to build the idl and all the examples

RunExample.bat – orb specific script to run an example (invoked by RunExample example1)

readme.txt – provides specific instructions on building and running the examples for this specific ORB

svc.conf – sets the POA threading model.

setenv.bat – sets the path to include Tao orb files libraries and also sets the ACE_ROOT and TAO_ROOT directories.

example_c.hh, example_c.hh – Contains #includes for the client/server idl files.

To build the examples:

From the tao14 directory run the following commands:

> vcvars32.bat (if your current environment isn't already set up for VC98).
> Setenv (modify this file if necessary to point to where your Tao ORB libraries are).
> nmake idl
> **nmake**

To run the examples after successful compilation:

Start the CAS Simulator by invoking CAS.bat from the Simulator directory in a separate MS-DOS window, or from the Run option on the Start menu, or by opening in the Windows Explorer.

From the tao14 directory run an Example, e.g. RunExample example1

RunExample.bat includes the **CAS hostname and Port number. If you want to point the GUI to another CAS box, simply change the hostname and port in it.**

OmniOrb 4.0.5/C++/Windows

The OmniORB 4.0.5 C++ examples were built using the following configuration:

> Microsoft Visual C++ V6.0
> Microsoft Windows 2000 Service Pack 4

Directory structure for OmniORB 4.0.5 examples:

> omniorbPOA–scripts and readme files

Makefile – nmake makefile to build the idl and all the examples

RunExample.bat – orb specific script to run an example (invoked by RunExample example1)

readme.txt – provides specific instructions on building <u>and</u> running the examples for this specific ORB.

setenv.bat – sets the path to include OmniORB libraries.

example_c.hh, example_c.hh – Contains #includes for the client/server idl files.

To build the examples:

From the *omniorb4POA* directory run the following commands:

vcvars32.bat (if your current environment isn't already set up for VC98).
setenv (modify this file if necessary to point to where your omniORB libraries are).
nmake idl
nmake

To run the examples after successful compilation:

Start the CAS Simulator by invoking CAS.bat from the Simulator directory in a separate MS-DOS window, or from the Run option on the Start menu, or by opening in the Windows Explorer.

From the omniORB4POA directory run an Example, e.g. RunExample example1

RunExample.bat includes the CAS **hostname and Port number. If you want to point the GUI to another CAS box, simply change the hostname and port in it.**

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OmniOrb 4.0.5/C++/Solaris

The OmniORB 4.0.5 C++ examples were built using the following configuration:

> Sun Workshop 6 Update 2 – C++ Compiler
> SunOS 5.6 sun4u sparc SUNW, Ultra-60

Directory structure for OmniORB 4.0.5 examples:

omniorb4POA–scripts and readme files

Makefile – nmake makefile to build the idl and all the examples

RunExample – orb specific script to run an example (invoked by RunExample example1)

readme – provides specific instructions on building and running the examples for this specific ORB.

example_c.hh, **example_c.hh** – Contains #includes for the client/server idl files.

To build the examples:

From the *omniorb4POA* directory run the following commands:

> make idl
> To make all of the examples:
> make

To make just one of the examples:

> make example1
> make example2
> Etc.

To run the examples after successful compilation:

Start the CAS Simulator by invoking CAS.bat from the Simulator directory in a separate MS-DOS window, or from the Run option on the Start menu, or by opening in the Windows Explorer.

From the omniORB4POA directory run an Example, e.g. RunExample example1

RunExample includes the CAS hostname and Port number. If you want to point the GUI to another CAS box, simply change the hostname and port in it.

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