Guide for CIMOM Miner Engine

Storage Configuration Manager

IBM Confidential

IBM Systems Group, Storage Software Products,
Storage Solutions development organization

Date	05/12/2007
Owner	IBM Storage Configuration Manager team
Department	Storage Development
Author	Zhang Jun Wei(zhjunwei@cn.ibm.com)
File Name	The guide for CIMOM Miner

Table of Contents

1. Introduction

1.1 Introduction to CIM & CIMOM

The Common Information Model (CIM) allows for the exchange of management information in a platform-independent and technology-neutral way. It is an object-oriented model, describing an organization's computing and networking environments (its hardware, software and services). All managed elements are positioned within this model, clarifying semantics, streamlining integration and reducing costs by enabling end-to-end multi-vendor interoperability in management systems.

The CIM Object Manager (CIMOM) manages CIM objects on a WBEM-enabled system. A CIM object is a representation, or model, of a managed resource, such as a printer, disk drive, or CPU. When a WBEM client application accesses information about an object, the CIMOM contacts either the provider for that object or the CIM Object Manager Repository. Providers are classes that communicate with managed objects to access data. A WBEM client application might request data from a managed resource that is not available from the CIM Object Manager Repository. In this case, the CIM Object Manager forwards the request to the provider for that managed resource. The provider dynamically retrieves the information.

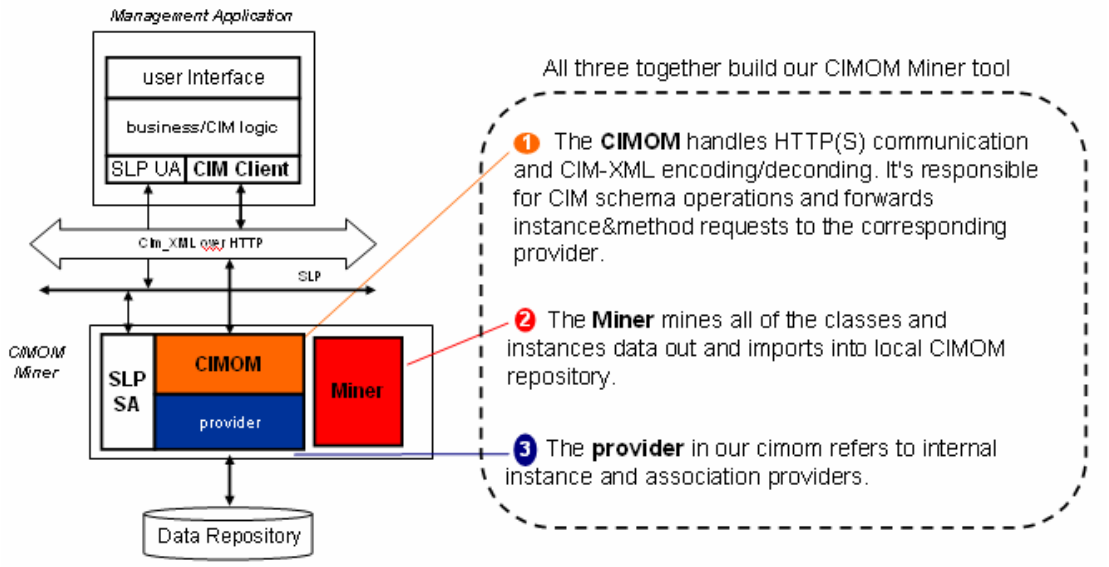
1.2 Introduction to CIMOM Miner

CIMOM Miner is a tool which will set up a local CIM Agent by mining all of the classes and instances data from remote CIMOM. By doing that, the upper layer management application can connect to the local simulation CIM Agent to test query operations.

1.2.1 Objective of CIMOM Miner

- Sets up local CIMOM, and gives responses to CIM client's request.
- Common CIM client tools can talk to local CIM Agent (like CIM Workshop, CIM navigator…)
- Provides a repository to store class and instance data.
- Mines all of the classes out, saves them to MOF files, and imports them into local CIMOM.
- Mines all of the instances out, and imports them into local CIMOM.
- Most important: Acts as a local CIMOM connecting to real managed object, which will accelerate testing speed for upper management applications.

1.2.2 Miner Architecture



1.2.4 Miner's core modules

● Mining Module

1 Mines all of the classes out and saves to MOF files

2 Builds MOF files into local CIMOM

3 Mines all of the instances data out

4 Imports instances into local CIMOM

● CIMOM Module

Pegasus open source CIMOM is used as our local CIMOM.

2. Steps to use CIMOM Miner to set up local CIM Agent

1) Download Pegasus CIMOM and SBLIMCIMClient.jar library and save to proper location.

2) Enter "CIMOMMiner" folder, and execute "run.bat" file.

3) In the command line window, do the follow on tasks:

a. use 'test' command to test the connection to remote CIMOM.

b. use 'mine' command to mine all of the classes from remote CIMOM and save them into MOF files;

c. use 'build' command to compile MOF files into local CIMOM (should be Pegasus); for other CIMOM, like OpenWBEM or WBEM Services, please use their own MOF compiler tool to do that.

d. start local CIMOM and use ‘copy’ command to mine all of the instances data from remote CIMOM to local CIMOM.

4) Restart local CIMOM and connect to it for testing.

Notes: when unzipping “CIMOMMiner.zip”, please pay attention to the name of target folder, if the name of folder is too long or contains any Chinese words, the execution may fail.

From as following, the way about how to do each step will be explained in detail.

3. Download Pegasus CIMOM and SBLIMCIMClient library

3.1 Download Pegasus CIMOM

Go to url: http://www.openpegasus.org/
Download: Pegasus 2.5.1
Save to: c:\, make sure the root folder is “c:\pegasus”

For easy usage, you can also go to url:
http://www.alphaworks.ibm.com/tech/smis_simulator
This is another alphaworks publish of me, which has Pegasus CIMOM inside and can be easily run and used as local CIMOM.

3.2 Download SBLIMCIMClient library

Go to url:
http://sourceforge.net/project/showfiles.php?group_id=128809&package_id=164895 (If the url doesn’t work, please go to http://www.sourceforge.net and search “SBLIM”)
Download: sblimCIMClient.jar, the version should be 1.2.6
Save to: “..\CIMOMMiner\lib\”

Notes: sblimCIMClient library is required in our tool, and it must be placed under “CIMOMMiner\lib\” folder, without it, our tool can’t run anymore.

4. Commands in Miner tool

4.1 'help' command

The 'help' command list all of the supported commands in our miner tool, here is a sample output:

```
The commands supported are:
1.build
2.copy
3.mine
4.exit
5.test
[-h] can be used after each command to display command format.
```

4.2 'build' command

The 'build' command will compile all of the MOF files into Pegasus CIMOM, from internal implementation, "cimmofl" tool of Pegasus is called.

The command format and options are as follows:

```
build  [ -h ] [ -m mof tool ] [ -r repository dir ] [ -n namespace] [ -d
dir ]
Options :
-h         - display this help message
-m         - the complete url of mof compile tool
-r         - the parent directory of repository, example: c:/pegasus
-n         - target namespace to compile mof into
-d         - directory of MOF files
```

Notes: if other CIMOM is used as local CIMOM, its own MOF compiler tool should be used instead of 'build' command.

4.3 'copy' command

The 'copy' command will mine all of the instances from remote CIMOM to local CIMOM.

The command format and options are as follows:

```
copy  [ -h ] [ -sU username ] [ -sP password ] [ -sN namespace] [ -sL location ]
[ -tU username ] [ -tP password ] [ -tN namespace] [ -tL location ]
Options :
-h          - display this help message
-sU         - user name to log in source CIMOM
-sP         - password to log in source CIMOM
-sN         - namespace of source CIMOM
```

```
-sL         - url location to connect source CIMOM, example:
http://localhost
-tU         - user name to log in target CIMOM
-tP         - password to log in target CIMOM
-tN         - namespace of target CIMOM
-tL         - url location to connect target CIMOM, example:
              http://localhost
```

4.4 'mine' command

The 'mine' command will mine all of the classes out from remote CIMOM and save them into MOF files.

The command format and options are as follows:

```
mine  [ -h ] [ -u username ] [ -p password ] [ -n namespace] [ -l location ]
[ -d dir ]
Options :
-h         - display this help message
-u         - user name to log in CIMOM
-p         - password to log in CIMOM
-n         - namespace of CIMOM
-l         - url location to connect CIMOM, example: http://localhost
-d         - destination directory path to put mined MOF files
```

4.5 'exit' command

The 'exit' command will stop the command line application.

4.6 'test' command

The 'test' command will check the connection to CIMOM server.

The command format and options are as follows:

```
test  [ -h ] [ -u username ] [ -p password ] [ -n namespace] [ -l location ]
Options :
-h         - display this help message
-u         - user name to log in CIMOM
-p         - password to log in CIMOM
-n         - namespace of CIMOM
-l         - url location to connect CIMOM, example: http://localhost
```

5. How to start Pegasus CIMOM

For quick start, there are two steps:

1. Configure and run “setvar.bat” file, it’s under “c:\pegasus” folder

---

Content of file: setvar.bat

```
REM call the standard Microsoft .bat for VC 6 setup.
call "C:\Program Files\Microsoft Visual Studio\VC98\Bin\Vcvars32.bat"
REM Set debug to something if you want compile in debug mode
set PEGASUS_DEBUG=true
REM set PEGASUS_ROOT to top of source tree
set PEGASUS_ROOT=C:\pegasus
REM set PEGASUS_HOME to where you want repository and executables
set PEGASUS_HOME=%PEGASUS_ROOT%
REM setup the path to the runtime files.
set path=%path%;%PEGASUS_HOME%\bin

REM setup the path to the runtime files.
set TOOLS=C:\pegasus\tools
REM set GNU_MAKE=%TOOLS%
REM set MU_PATH=%TOOLS%
set path=%TOOLS%;%PEGASUS_HOME%\bin;%path%
set PEGASUS_PLATFORM=WIN32_IX86_MSVC

REM Set Indication consumer to display messages on console
set PEGASUS_DISPLAYCONSUMER_DIR=console
```

---

2. Run “cimserver.exe”
   This file is under “c:\pegasus\bin” folder, but after you run “setvar.bat”, it’s not necessary to enter “bin” folder.

For more details, please go to OpenPegasus website and get any material that will help.

6. How to connect to the local CIM Agent

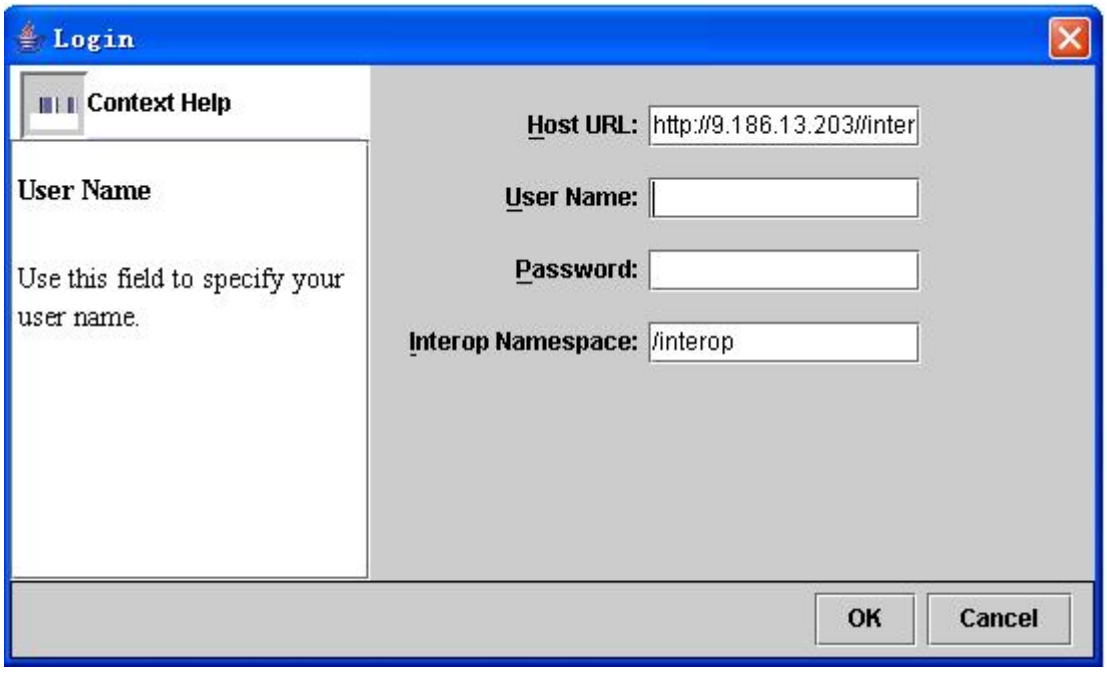
6.1 Using CIM Workshop tool to connect

6.1.1 Introduce to CIM Workshop

CIM Workshop, a GUI-based development tool. You use CIM Workshop to do the following:

- View, add, and delete name spaces
- Add properties, qualifiers, and methods to new classes
- Create instances
- Modify instance values
- Traverse associations
- Subscribe to events
- Execute methods

6.1.2 Start CIM Workshop



6.2 Write Client code to connect to the local CIM Agent (java)

6.2.1 Sequence of setting up Client code

- Configure URL, Port , name space, user, password
- Create CIMClient
- Use CIMClient to manipulate CIM classes and instances.
- Close CIMClient

6.2.2 Sample of client codes

```
//****************sample of create CIM client**********************
String cimAgentAddress = http://9.186.10.23:5988;
String username = "a";
String password = "a";
String namespace = "/root/cimv2";

// 1. Create user credentials
UserPrincipal userPr = new UserPrincipal(username);
PasswordCredential pwCred = new PasswordCredential(password);

// 2. Set NameSpace
CIMNameSpace ns = new CIMNameSpace(cimAgentAddress, namespace);

// 3. Create CIM Client
System.out.println("Connecting to CIM Server");
CIMClient _cimClient = new CIMClient(ns, userPr, pwCred);

//***************end of sample**************************************
```

7. Trouble Shooting

• Why I can't execute run.bat?

Please make sure jdk above version 1.4 or IBM's jre above version 1.4 are installed; and make sure the sblimcimclient.jar above version 1.2.6 is

downloaded and placed into "lib" directory.

- Why I can't compile MOF files into Pegasus by using cimmofl manually?

Please make sure you use the apprioate options, here is a correct example:

```
cimmofl -aEV -nroot/aristos -Rc:\pegasus ..\cimEngineHeader.mof
```

- Which header mof file should I use to compile all of the files into repository of CIMOM by manual?

The file is: cimEngineHeader.mof, and locates in the destination directory which is set in "mine" command.

- Why I get many qualifier definition errors when compiling MOF files? Just like:

Could not find declaration for Qualifier named CIMTYPE
Parsing error: parse error: Could not find declaration for Qualifier named CIMTYPE

The qualifier definition used in this mining tool is the standard qualifier list of DMTF, so if there is any extended qualifier or different definition for the qualifier with the same name, please add them or modify them in the file: "qualifiers.mof".