

NN42020-123

Multimedia Communication Portfolio

Multimedia Communication Server

Open Provisioning Interface

MCS 5100 3.5 Standard 4.0 January 2006





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[Open Provisioning Interface Reference Guide](#)



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Open Provisioning Interface

Topics in this chapter

- [Open Provisioning Interface introduction](#)
- [Third party client development](#)
- [Authentication and authorization](#)
- [Provisioning Interface](#)
- [Deprecated methods and method fields](#)

Open Provisioning Interface introduction

The Open Provisioning Interface (OPI) is used to remotely provision the Multimedia Communication Server (MCS) system. OPI is based on the Simple Object Access Protocol (SOAP) 1.1 and the emerging web services standard. SOAP is a cross-platform, cross-language text based protocol utilizing the benefits of XML (extensible Markup Language). SOAP is commonly used as a tool in distributed applications named web services. While SOAP in itself is not transport dependent, OPI relies on HTTP (Hyper Text Transfer Protocol) as its transport.

OPI gives the service provider the means to integrate MCS provisioning with their own applications by allowing:

- Machine-to-machine interface for provisioning tasks
- Pass-through provisioning from existing provisioning systems
- Support for the Bulk Provisioning Tool

For information on the BPT, refer to the *Bulk Provisioning Tool Reference Guide*.

Web Services Description Language (WSDL) 1.1

OPI supports the industry standard Web Services Description Language (WSDL) 1.1. WSDL allows the service provider to provision their MCS system with existing and custom applications. By supporting the WSDL standard, service providers can rapidly develop client side code with standard toolsets.

[Open Provisioning Interface Reference Guide](#)

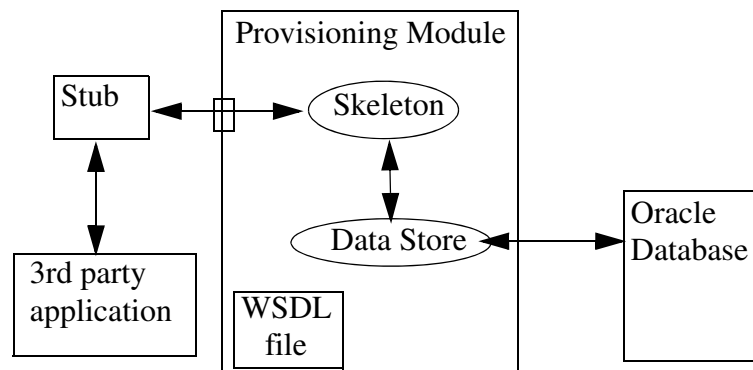
WSDL is an XML language that contains information about the interface, semantics and administration of a call to a web service. A detail description of the WSDL standard is available online at the W3C (World Wide Web Consortium) web site at the following URL:

www.w3.org/TR/wsdl

Third party client development

The goal of OPI is to allow customer third party applications to interface with the MCS provisioning system. Once developed, the third party application will pass an object to a generated stub. The stub will translate the object into a SOAP message and pass it along to the skeleton in the Provisioning Module. The skeleton translates the SOAP message back to an object, and sends it to the Provisioning Module data store processes. The data store then interfaces with the Oracle Database. The data store then interfaces with the Oracle Database. The translations happen in reverse from the Database to the third party application.

Figure 1 Logical view of OPI interactions



The development of third party provisioning clients involves the following steps:

- Get the WSDL
- Generate Stub using supported toolkit that supports complex type
- Implement interface to access stubs
- Access stubs from the third party application

Get the WSDL

The WSDL file for MCS is stored on the server hosting the Provisioning Module. You can view and download the WSDL using a web browser.

Note: By definition, all the OPI commands (methods) are listed in the WSDL.

From a workstation

- 1 Open a web browser
- 2 To display the WSDL in the web browser, navigate to the following URL

http://<provclientIP>/prov/services/OPI?WSDL

Where:

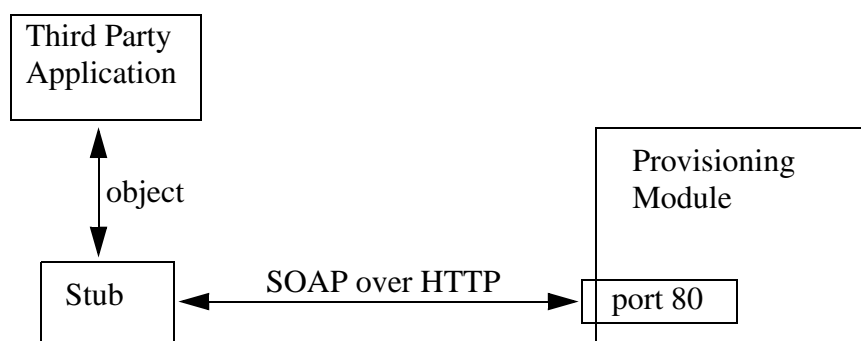
<provclientIP> is the IP address used by the Provisioning Client

- 3 Download the WSDL file

Generate stubs

The stub is basically a translator. It takes the “user” object (whatever type of object) from the interface and converts it to a SOAP message and sends it to the Provisioning Module. Likewise, a SOAP message from the Provisioning Module is translated back to the object. HTTP is used as the transport for OPI. The Provisioning Module listens on port 80 for the SOAP over HTTP messages.

Figure 2 Interactions of the stub



Stubs are generated using a supported toolset. Currently, only the Apache AXIS 1.0 (Apache extensible Interaction System <http://ws.apache.org/axis>) toolset has been tested and approved. AXIS is Java specific and creates a Java stub. The OPI WSDL may work with other toolsets, but thorough testing has not yet been completed. Other

toolsets may be supported in subsequent releases once testing has been completed.

Refer to the chapter [Building OPI clients](#) for an example of generating a Java stub.

Implement interface accessing stubs

An interface must be developed that will access the stubs. The interface must support authentication on each OPI request.

If the credentials are not present, or fail validation, a SOAP fault will be sent back indicating the failure and the action will not be performed.

Refer to [Error codes and messages on page 29](#) for a complete list of error messages.

Access stubs from the third-party application

When the interface accesses/invokes the stubs, the stub will generate a SOAP message that will be sent to the Provisioning Module on port 80. The stub is basically a translator. It takes the “user” object (whatever type of object) from the interface and converts it to a SOAP message and sends it to the Provisioning Module. The skeleton on the server with the Provisioning Module does the reverse. It takes the SOAP message and translates it back to a “user” object (whatever type of object) and sends it to the Provisioning Module’s Data Store that stores it in the database.

Authentication and authorization

Authentication and authorization of OPI requests are briefly described in the following sections:

- [Authentication](#)
- [Authorization](#)

For more information on this topic, please refer to the Provisioning Client User Guide.

Authentication

Each OPI request is authenticated using HTTP basic authentication. Each request is required to pass a username and password before gaining access to the interface. Therefore, there is no login/logout interface as the request is authenticated on each request. If the credentials are not present, or fail validation, a SOAP fault will be sent back indicating the failure and the action will not be performed. The credentials are verified against any active administrator in the MCS

system. These administrators can be added/modified through both the Provisioning Client and the OPI itself.

Utilizing, the standard HTTP basic authentication enables OPI to be interoperable with the common web services toolsets. Typically, the toolsets allow for simple inclusion of username and password adhering to this standard. Within the MCS system the authentication is performed locally in memory to alleviate the reoccurring authentication. In addition, the authentication and authorization are kept in synchronization with the Provisioning Client, so changes to the administrator profile from either the Provisioning Client or the OPI are immediately effective.

Authorization

Authentication is the first step in processing the incoming request. Once the request has been authenticated, the administrator must clear authorization before performing the action. The authorization includes both domain-level authorization and provisioning-level authorization. If either fails validation, a SOAP fault is send back indicating the reason for failure, and the action will not be preformed.

Domain-level authorization

Each administrator is assigned one or more domains for access and control (this can be overridden by the "All domain access" in role creation). For instance, the MCS system might consist of three separate domains, Widget.com, Gadget.com, and Sprocket.com. An administrator, WidgetAdmin, can be created with only Widget.com in the list of "provisionable domains". This limits WidgetAdmin to provisioning activities inside of this domain only, and will not permit access to the other domains. Therefore, if a request from WidgetAdmin comes in to modify a user outside of his domain, it will be rejected having failed authorization. In addition, attempts to list domain information will only return Widget.com information.

Provisioning-Level authorization

The provisioning module of the MCS system is broken into various major categories (Domains, Users, Telephony Routes, etc.). The provisioning system allows for various administrator roles to be created across these categories. Upon creation, the administrator is assigned to a particular role. This allows the service provider to create various administrator roles to suit their specific needs. In each category the role can have any combination of the following rights: Read, Write, and Delete. For example, a "user admin role" could be created which only had the ability to read domain info, and read, modify, and delete user information. The administrators given this role will not be able to manipulate the telephony routes, or other areas of the MCS system.

OPI authorizes each request to verify the incoming credentials have the appropriate role to perform the given action.

Provisioning Interface

The following list is a summary of the provisioning object types contained within the WSDL. Detailed information on the provisioning objects and their types can be found in the WSDL file.

- Simple Types:
 - Boolean
 - Byte
 - Double
 - Float
 - Integer
 - Long
 - Short
 - String
- Complex types (Domain, User, Route, etc..)
- "Type[]" = Array of Type (i.e. String[] = Array of Strings)
- Method summaries consist of method description with return type
- Return type of void implies no response

This document does not cover the various actions that can be performed through the OPI interface. Nor is it intended to cover in detail what affect these changes make to the MCS system, but rather to give an overview of the OPI the interface. The *Provisioning Client User Guide (NN42020-105)* details provisionable entities and their role in the MCS system. In addition, the *MCS Bulk Provisioning Tool Reference Guide (NN42020-501)* lists the provisioning methods available using the Bulk Provisioning Tool (BPT) command line. The BPT also uses the OPI interface.

Success indication on remove methods

Some OPI Interface methods, that provide the ability to remove data, return indication of success even though the data did not pre-exist in the database. This mirrors the functionality of the database. Basically, a success indication for a "remove" OPI Interface method indicates that the associated data no longer exists in the database.

When possible, OPI Interface methods provide additional indication (in the form of an error message) regarding specific data elements

(domain and devices) that are not pre-existing in the database when the remove method is invoked.

Example

An invocation of "removeUser using (jimbo@nn.com)" will return an error indication, "Invalid Data: Domain Not found 'nn.com'", since the domain is not valid.

But if the domain is valid and the user is not pre-existing, then a success indication will be returned since the user is not provisioned on the system.

Provisioning data visibility

Provisioning data added via the OPI is immediately available to other provisioning clients connected to the same instance of the Provisioning Module. However, it may take up to 5 minutes before the same data is visible to clients connected to a second instance of a provisioning module running in the system.

PROV606 logs

PROV606 logs capture all provisioning activity performed using the OPI, including the administrator performing the task. The logs generated by OPI clients display the request type OPI. The logs are viewed in the System Management Console's log browser and are described in the *Provisioning Module Basics (NN10274-111)* guide.

Deprecated methods and method fields

Methods and their associated parameters (elements) defined in the WSDL change as features and services are added and improved. With each release, new methods may be added, and others may be deprecated. Deprecated methods are being removed, but are supported in the current release.

New methods can be found through a comparison of the WSDL of this release with the WSDL of a previous release. Deprecated methods and method parameters are more difficult to find, as they are still supported, and therefore still in the WSDL. The following tables identify the deprecated methods for this release.

Table 1 Deprecated methods

Deprecated methods
addPooledResource
deletePooledResource

Table 1 Deprecated methods

Deprecated methods
getAllPooledResources
getAllPooledResourceTypes
getAllRoutingAlgorithms
getIPCMCapacityByDomain
getPooledResource
modifyPooledResource
modifyServiceParm
setServiceParmAsDefault

The following table lists deprecated elements. These correspond to fields in the Provisioning Client, and method parameters in the BPT.

Table 2 Deprecated method elements (Sheet 1 of 2)

Affected method	Deprecated method element
addDevice	activeProxy defaultProxyHost defaultProxyPort ipcm rtpPort
addDevices	activeProxy defaultProxyHost defaultProxyPort ipcm rtpPort
modifyDevice	activeProxy defaultProxyHost defaultProxyPort ipcm rtpPort
Note: The elements voiceMail , routes , and blendedAliases have been added as methods associated with user operations.	

Table 2 Deprecated method elements (Sheet 2 of 2)

Affected method	Deprecated method element
addUser (see note)	voiceMail voiceMailServer chargeld vpn blendedAliases routes ipcmProperties
addUsersToDomain (see note)	voiceMail voiceMailServer chargeld vpn blendedAliases routes ipcmProperties
modifyUser (see note)	voiceMail voiceMailServer chargeld vpn blendedAliases routes ipcmProperties
Note: The elements voiceMail , routes , and blendedAliases have been added as methods associated with user operations.	



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Building OPI clients

Topics in this chapter

- [Building OPI Stubs Clients](#)
- [Writing a client to perform some specific OPI operations](#)
- [Two examples](#)
- [A special note on .NET authentication headers](#)

Building OPI Stubs Clients

The following sections describes the requirements and steps tasks performed to generate Open Provisioning Interface (OPI) client stubs. The process is based on using the Axis toolkit.

- [Requirements](#)
- [Downloading the AXIS toolkit](#)
- [Setting the Classpath](#)
- [Downloading the WSDL file](#)
- [Compiling the stubs](#)

Requirements

The following are required for performing the steps in this examples

- working knowledge of Java application development
- comfortable with using DOS commands
- JDK (Java Developer Kit) 1.3 or higher
- Java executable available in the system path
- Axis toolkit version 1.1 final

Downloading the AXIS toolkit

The steps in this chapter use the AXIS toolkit 1.1 final version. The AXIS toolkit is a free download from the Apache Web Site.

Procedure 1 Downloading the AXIS toolkit

On the PC

- 1 In your web browser, navigate to the Axis toolkit page on the Apache web site.

ws.apache.org/axis

The 1.1 final version is recommended.

- 2 Download the 1.1 final version file, *axis-1_1.zip*, to your PC.
- 3 Unzip the files to a drive on the PC. In this example, we use Axis files extracted to folder `D:\axis-1_1`.

Setting the Classpath

The classpath needs to be set for specific jar files that are part of the Axis toolkit.

Procedure 2 Setting the Classpath

On the PC

- 1 Open a command prompt in the DOS window
- 2 Set the classpath for all the jar files found in the directory `D:\axis-1_1\webapps\axis\WEB-INF\lib`.

```
set CLASSPATH= D:\axis-1_1\webapps\axis\WEB-INF\lib\axis.jar;D:\axis-1_1\webapps\axis\WEB-INF\lib\axis-ant.jar;D:\axis-1_1\webapps\axis\WEB-INF\lib\commons-discovery.jar;D:\axis-1_1\webapps\axis\WEB-INF\lib\commons-logging.jar;D:\axis-1_1\webapps\axis\WEB-INF\lib\jaxrpc.jar;D:\axis-1_1\webapps\axis\WEB-INF\lib\log4j-1.2.8.jar;D:\axis-1_1\webapps\axis\WEB-INF\lib\saaj.jar;D:\axis-1_1\webapps\axis\WEB-INF\lib\wsdl4j.jar
```
- 3 Create a folder for the generated client stubs. In this example, we use the folder `D:\opiclient`.

```

OPIClient
D:\>set JAVA_HOME=C:\jdk1.4\j2sdk1.4.2
D:\>set PATH=C:\jdk1.4\j2sdk1.4.2;%PATH%
D:\>set CLASSPATH=D:\axis-1_1\webapps\axis\MEB-INF\lib\axis.jar;D:\axis-1_1\webapps\axis\MEB-INF\lib\axis-ant.jar;D:\axis-1_1\webapps\axis\MEB-INF\lib\commons-discovery.jar;D:\axis-1_1\webapps\axis\MEB-INF\lib\commons-logging.jar;D:\axis-1_1\webapps\axis\MEB-INF\lib\jaxrpc.jar;D:\axis-1_1\webapps\axis\MEB-INF\lib\log4j-1.2.8.jar;D:\axis-1_1\webapps\axis\MEB-INF\lib\saaj.jar;D:\axis-1_1\webapps\axis\MEB-INF\lib\wsdl4j.jar;%CLASSPATH%
D:\>cd opiclient
D:\>cd opiclient
D:\>cd opiclient
D:\>dir
Volume in drive D has no label.
Volume Serial Number is 9B29-6769

Directory of D:\opiclient

06/07/2004  01:05p    <DIR>          .
06/07/2004  01:05p    <DIR>          ..
06/07/2004  01:05p                630,834 OPI.wsdl
               1 File(s)        630,834 bytes
               2 Dir(s)   13,556,207,488 bytes free

D:\opiclient>_

```

Downloading the WSDL file

Download the Web Server Description Language (WSDL) from the Provisioning Server.

Procedure 3 Downloadin the WSDL file

On the PC

- 1 In your web browser, navigate to the URL:
<http://<web-server-host-ip>/prov/services/OPI?wsdl>
 where
 <web-server-host-ip> is the IP address of the Provisioning Server. This is same IP address used by the Provisioning Client.
- 2 Download the WSDL file to the folder created for the OPI clients.
 In our example, the file is named `opi.wsdl` and it is downloaded to the folder `D:\opiclient`.

Compiling the stubs

Procedure 4 Compiling the stubs

On the PC

- 1 Open a command prompt and navigate to the directory to the one containing the downloaded WSDL file (`D:\opiclient`).
- 2 Run the WSDL2JAVA tool on the WSDL file. For Example

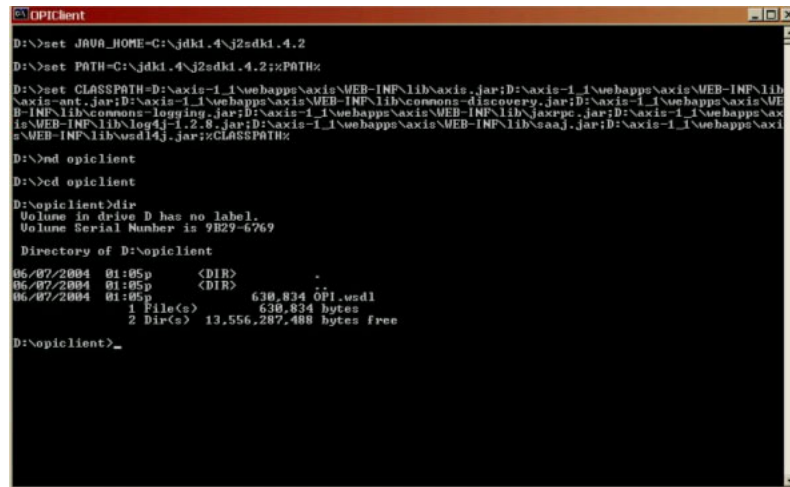
```

java org.apache.axis.wsdl.WSDL2Java -O -1 -d Session -Nurn:OPI com.client.opi.service opi.wsdl

```

This creates the client stubs under
 d:\opiclient\com\client\opi\service
 and the client data objects (beans) under
 d:\opiclient\com\nortelnetworks\ims\opi.

The namespace mapping from OPI to com.client.opi.service can be changed to another mapping of choice.



```

OPIClient
D:\>set JAVA_HOME=C:\jdk1.4\j2sdk1.4.2
D:\>set PATH=C:\jdk1.4\j2sdk1.4.2;%PATH%
D:\>set CLASSPATH=D:\axis-1_1\oebapps\axis\MEB-INF\lib\axis.jar;D:\axis-1_1\oebapps\axis\MEB-INF\lib\axis-ant.jar;D:\axis-1_1\oebapps\axis\MEB-INF\lib\commons-discovery.jar;D:\axis-1_1\oebapps\axis\MEB-INF\lib\commons-logging.jar;D:\axis-1_1\oebapps\axis\MEB-INF\lib\jstpp.jar;D:\axis-1_1\oebapps\axis\MEB-INF\lib\log4j-1.2.8.jar;D:\axis-1_1\oebapps\axis\MEB-INF\lib\saaj.jar;D:\axis-1_1\oebapps\axis\MEB-INF\lib\usdl.jar;%CLASSPATH%
D:\>md opiclient
D:\>cd opiclient
D:\opiclient>dir
Volume in drive D has no label.
Volume Serial Number is 9B29-6769

Directory of D:\opiclient

06/07/2004  01:05p        <DIR>          .
06/07/2004  01:05p        <DIR>          ..
06/07/2004  01:05p             630,834 OPI.usdl
               1 File(s)          630,834 bytes
               2 Dir(s)    13,556,207,480 bytes free

D:\opiclient>_
  
```

Note: The `OPISoapBindingStub.java` that is generated under `com\client\opi\service` will have a large static block that will not compile. This file must be edited by hand to split the large static block into two to three smaller ones so that it compiles. This is a known issue due to the fact that the code is auto generated.

- 3 Compile the files that were generated in the above step using either command line 'javac' or an IDE like netbeans or eclipse, and put them into a separate folder.

In the example **javac** is used (shown in the following screenshot). A folder called `classes` was created in this example, and the generated class files put into it.

```

D:\opiclient>java org.apache.axis.wsdl.WSDL2Java -O -I -d Session -Nurn:OPI com.client.opi.service o
pi.wsdl
D:\opiclient>dir d:\opiclient\com\client\opi\service
Volume in drive D has no label.
Volume Serial Number is 9B29-6769

Directory of d:\opiclient\com\client\opi\service

06/07/2004 01:16p <DIR> .
06/07/2004 01:16p <DIR> ..
06/07/2004 01:16p          79,529 OPI.java
06/07/2004 01:16p          468 OPIService.java
06/07/2004 01:16p          3,814 OPIServiceLocator.java
06/07/2004 01:16p          1,076,730 OPISoapBindingStub.java
06/07/2004 01:16p          4 File(s)          1,159,541 bytes
                2 Dir(s)    13,552,490,496 bytes free

D:\opiclient>dir /W d:\opiclient\com\nortelnetworks\ins\opi
Volume in drive D has no label.
Volume Serial Number is 9B29-6769

Directory of d:\opiclient\com\nortelnetworks\ins\opi

[.]
Admin.java          AliasRouting.java      AddressBookEntry.java
Branding.java       CallAction.java        BannedSubscriber.java
CallLog.java        Condition.java          CallDestination.java
ConnDesktopUser.java DetailedCondition.java  ConnDesktopService.java
Domain.java         DomainCos.java          Device.java
DomainLocation.java DomainInResource.java  DomainLocale.java
ForeignDomain.java  Gateway.java            ErlInfo.java
GenericIcmAction.java InterworkingDomainInfo.java GatewayRoute.java
IPCMDomain.java     LDAPUser.java           IPCM.java
LDAPSchema.java     LdapLineBlock.java     LDAPInfo.java
LicenseKeyUsage.java Line.java                LDAPUserDefaults.java
LocaleData.java     LocationInfo.java       LineUicemailServer.java
MeetMeConfData.java MpRoutabilityGroup.java MediaPortalGroup.java
NumberQualifierFE.java PasswordPolicy.java     NameValue.java
PooledEntityRoute.java PooledResource.java    PooledEntity.java
PreTranslatorFE.java ProvisionableEntity.java PooledResourceRoute.java
RejectReasonAction.java Right.java               ProvisionException.java
Route.java          RouteList.java          Role.java
Service.java        ServicePackage.java     RouterAction.java
SIPUicemailServer.java SMPPConfigInfo.java    ServiceParameter.java
StatusReason.java  TelephonyRoute.java     SMSSubscriber.java
TimeBlockGroup.java TimeZone.java           TimeBlock.java
TrunkGroup.java    TrunkUicemailServer.java TreatmentGroup.java
UCCreateingData.java UCUserData.java         UCAutoIDData.java
UserData.java       UserPicture.java        User.java
UnRoutes.java       UnTerminalServer.java   UserUicemail.java
XLAToolData.java   88 File(s)             UicemailServer.java
                540,818 bytes
                2 Dir(s)    13,552,490,496 bytes free

D:\opiclient>_

```

The Client classes are now ready to be used.

Writing a client to perform some specific OPI operations

Once the OPI stubs have been generated and compiled, the real OPI client can be constructed and OPI method calls can be made. To accomplish this, the following steps must be performed in code.

Procedure 5 Writing a client to perform some specific OPI operations

- 1 Instantiate the OPIServiceLocator.
- 2 Instantiate a URL object that will point to the Provisioning Server location and the OPI service running on it.
- 3 Invoke the getOPI call on the OPIServiceLocator instance with the URL created in step 2. This action will result in an instance of the OPI object, which can be used to make OPI calls.
- 4 Set the authentication information on the OPI object from step 3. Perform this action by down casting the OPI object as a org.apache.axis.client.Stub object.

- 5 Make the OPI method call (for example, `getUser`) by invoking the same on the OPI instance from step 3.

An example is shown below. In the example, this class is placed under `D:\opiclient`.

```
import org.apache.axis.client.Stub;
import com.client.opi.service.*;
import com.nortelnetworks.ims.opi.*;
import java.net.URL;

public class OPIclient
{
    public static void main(String[] args)
    {
        try
        {
            String sourceServer = "47.104.23.58";
            String sourceAdminName = "admin";
            String sourceAdminPass = "admin";

            // Create URL for Provisioning Server
            URL sourceurl = new URL ("http://" + sourceServer + ":80/prov/services/OPI");

            // Instantiate the OPIServiceLocator
            OPIServiceLocator sourceLocator = new OPIServiceLocator ();

            // Obtain an instance of the OPI Stub
            OPI opi = sourceLocator.getOPI (sourceurl);

            // Set the authentication details (username and password)
            ((Stub) opi).setUsername (sourceAdminName);
            ((Stub) opi).setPassword (sourceAdminPass);

            // Make some 'real' OPI call, get Users service package
            User user = opi.getUser("2213@nortelnetworks.com");
            System.out.println("Users' service package = " + user.getServicePackage());
        }
        // Catch Exception from remote server
        catch (java.rmi.RemoteException ex)
        {
            System.out.println (ex.getMessage ());
        }
        // Bad URL exception
        catch (java.net.MalformedURLException ex)
        {
            System.out.println("Invalid URL");
        }
        // Unable to get ServiceLocator
        catch (javax.xml.rpc.ServiceException ex)
        {
            System.out.println("Unable to get an instance of OPIServiceLocator" +
            ex.getMessage());
        }
    }
}
```

The client class can be compiled similarly to the compilation of the OPI Stubs and executed. During execution the OPI Stub classes and the AXIS toolkit jars must be present in the classpath. This occurrence appears in the following figure.

```
OPIClient
D:\opiclient>javac -d classes -classpath d:\opiclient\classes;d:\axis-1_1\uebapps\axis\WEB-INF\lib\axis.jar;d:\axis-1_1\uebapps\axis\WEB-INF\lib\axis-ant.jar;d:\axis-1_1\uebapps\axis\WEB-INF\lib\commons-discovery.jar;d:\axis-1_1\uebapps\axis\WEB-INF\lib\commons-logging.jar;d:\axis-1_1\uebapps\axis\WEB-INF\lib\jaxrpc.jar;d:\axis-1_1\uebapps\axis\WEB-INF\lib\log4j-1.2.8.jar;d:\axis-1_1\uebapps\axis\WEB-INF\lib\saa.jar;d:\axis-1_1\uebapps\axis\WEB-INF\lib\wsdl4j.jar OPIClient.java
D:\opiclient>set classpath=D:\axis-1_1\uebapps\axis\WEB-INF\lib\axis.jar;D:\axis-1_1\uebapps\axis\WEB-INF\lib\axis-ant.jar;D:\axis-1_1\uebapps\axis\WEB-INF\lib\commons-discovery.jar;D:\axis-1_1\uebapps\axis\WEB-INF\lib\commons-logging.jar;D:\axis-1_1\uebapps\axis\WEB-INF\lib\jaxrpc.jar;D:\axis-1_1\uebapps\axis\WEB-INF\lib\log4j-1.2.8.jar;D:\axis-1_1\uebapps\axis\WEB-INF\lib\saa.jar;D:\axis-1_1\uebapps\axis\WEB-INF\lib\wsdl4j.jar;d:\opiclient\classes
D:\opiclient>java OPIClient
Users' service package = Gold-NoBlender
D:\opiclient>
```

Two examples

The following two examples illustrate the creation of the two different routes that execute OPI calls:

- [Example - creating a user route to screen two numbers](#)
- [Example - creating a route using simultaneous ringing](#)

Example - creating a user route to screen two numbers

The following example illustrates creation of a user route that screens on two numbers and forwards them straight to voice.

```
import org.apache.axis.client.Stub;
import com.client.opi.service.*;
import com.nortelnetworks.ims.opi.*;
import java.net.URL;

public class OPIClient
{
    public static void main(String[] args)
    {
        try
        {
            String sourceServer = "47.104.23.58";
            String sourceAdminName = "admin";
            String sourceAdminPass = "admin";

            // Create URL for Provisioning Server
            URL sourceurl = new URL ("http://" + sourceServer + ":80/prov/services/OPI");

            // Instantiate the OPIServiceLocator
            OPIServiceLocator sourceLocator = new OPIServiceLocator ();

            // Obtain an instance of the OPI Stub
            OPI opi = sourceLocator.getOPI (sourceurl);

            // Set the authentication details (username and password)
            ((Stub) opi).setUsername (sourceAdminName);
            ((Stub) opi).setPassword (sourceAdminPass);

            // Create new route, give it a name and set it to active
            Route myRoute = new Route( );
            myRoute.setRouteName( "screening_route" );
            myRoute.setIsActive( true );

            // Set the trigger action, in this case on receiving a call.
            myRoute.setTriggerActions( new String[] { "Call" } );

            // Create a condition on the trigger, a call from any of two numbers
            Condition myCondition = new Condition();

            // type is one of ("PAB","GAB","PHONE","ADDRGRP","TIMEBLK","ANON","PRESENCE)
            myCondition.setType( "PHONE" );

            //list of phone numbers to screen against.
            //These values depend upon the type in the previous step.
            //For instance, if type=PAB, then values should be nicknames in the PAB
            myCondition.setValues(new String[] { "2141231234", "9721231234" } );
        }
    }
}
```



```
    // Apply condition to the route
myRoute.setConditions(new Condition[] { myCondition } );

    // Create a CallAction to be performed when condition is met
CallAction myCallAction = new CallAction( );

    // Create a destination to the voicemail server
CallDestination primaryDestination = new CallDestination( );

    //this should answer immediately, but this provides the log timeout
primaryDestination.setNumOfRings( new Integer(9) );

    // Set the destination to the voicemail box.
primaryDestination.setDestinations( new String[] { "voicemail@nortelnetworks.com" } );

    // Set the action to the route
myRoute.setTermAction(myCallAction);

    // Add the route
opi.addRoute("3321@nortelnetworks.com", myRoute);
}
// Catch Exception from remote server
catch (java.rmi.RemoteException ex)
{
    System.out.println (ex.getMessage ());
}
// Bad URL exception
catch (java.net.MalformedURLException ex)
{
    System.out.println("Invalid URL");
}
// Unable to get ServiceLocator
catch (javax.xml.rpc.ServiceException ex)
{
    System.out.println("Unable to get an instance of OPIServiceLocator" +
ex.getMessage ());
}
}
}
```

Example - creating a route using simultaneous ringing

The following example illustrates the creation of a route. It travels during "after-hours" and will first ring two given phone numbers simultaneously and then will roll over to voice mail.

```
import org.apache.axis.client.Stub;
import com.client.opi.service.*;
import com.nortelnetworks.ims.opi.*;
import java.net.URL;

public class OPIClient
{
    public static void main(String[] args)
    {
        try
        {
            String sourceServer = "47.104.23.58";
            String sourceAdminName = "admin";
            String sourceAdminPass = "admin";

            // Create URL for Provisioning Server
            URL sourceurl = new URL ("http://" + sourceServer + ":80/prov/services/OPI");

            // Instantiate the OPIServiceLocator
            OPIServiceLocator sourceLocator = new OPIServiceLocator ();

            // Obtain an instance of the OPI Stub
            OPI opi = sourceLocator.getOPI (sourceurl);

            // Set the authentication details (username and password)
            ((Stub) opi).setUsername (sourceAdminName);
            ((Stub) opi).setPassword (sourceAdminPass);

            Route myRoute = new Route( );
            myRoute.setRouteName( "after-hours" );
            myRoute.setIsActive( true );

            // Triggered when a call is received
            myRoute.setTriggerActions( new String[] { "Call" } );

            // Create a condition for 'TIMEBLOCK'
            Condition myCondition = new Condition();
            // type is one of ("PAB","GAB","PHONE","ADDRGRP","TIMEBLK","ANON","PRESENCE)
            myCondition.setType("TIMEBLK");

            //Assumes "after-hours" is already added as a time block, via PA or OPI
            myCondition.setValues(new String[] { "after-hours" } );
        }
    }
}
```

```

// Set the condition
myRoute.setConditions(new Condition[] { myCondition } );

CallAction myCallAction = new CallAction( );

// Create primary destination to ring two numbers for 5 ring
CallDestination primaryDestination = new CallDestination( );
primaryDestination.setNumOfRings( new Integer(5) );
primaryDestination.setDestinations( new String[] { "97212312324", "9721231235" } );

// Create a destination to roll over to voicemail
CallDestination vmDestination = new CallDestination( );
vmDestination.setNumOfRings( new Integer(9) );
vmDestination.setDestinations( new String[] { "voicemail@nortelnetworks.com" } );

// Set the destinations in the desired order
myCallAction.setDestinations(
    new CallDestination[] {primaryDestination, vmDestination});

// set the call action
myRoute.setTermAction(myCallAction);

// Create the route
opi.addRoute("3321@nortel.com", myRoute);
}
// Catch Exception from remote server
catch (java.rmi.RemoteException ex)
{
    System.out.println (ex.getMessage ());
}
// Bad URL exception
catch (java.net.MalformedURLException ex)
{
    System.out.println("Invalid URL");
}
// Unable to get ServiceLocator
catch (javax.xml.rpc.ServiceException ex)
{
    System.out.println("Unable to get an instance of OPIServiceLocator" +
ex.getMessage());
}
}
}

```

A special note on .NET authentication headers

The authentication headers for AXIS toolkit generated stubs are set on the client stub as described in the preceding example. In that scenario, the client stub is cast down to a `org.apache.axis.client.Stub` object. In the case of a .NET client this must be done differently. The MCS OPI currently supports basic HTTP authentication and the authentication headers must be set to Base64 encoded authentication on the client side.

The sample code below shows how to set the authentication headers for a .NET client. The code must be added in the stub class so that it may hijack the request and add the headers to it.

```
protected override WebRequest GetWebRequest(Uri uri)
{
    string username = "admin";
    string password = "admin";
    string plainTextCred = username + ":" + password;

    System.IO.MemoryStream ms = new System.IO.MemoryStream();
    System.IO.StreamWriter sw = new System.IO.StreamWriter(ms);
    sw.Write(plainTextCred);
    sw.Flush();

    byte[] bytearray = ms.ToArray();
    string base64Cred = Convert.ToBase64String(bytearray);

    System.Net.WebRequest req = base.GetWebRequest(uri);
    req.Headers.Add("Authorization", "Basic" + base64Cred);
    return req;
}
```



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Error codes and messages

This section lists the error codes and their associated messages that may be returned during a OPI provisioning session.

The error messages are classified into following categories:

- [Data-Access error messages \(000000\)](#)
- [DirectoriesImpl error messages \(001000\)](#)
- [AddressBookImpl error messages \(002000\)](#)
- [UserServicePkgImpl error messages \(003000\)](#)
- [UserMgrImpl error messages \(004000\)](#)
- [DomainMgrImpl error messages \(005000\)](#)
- [RouteMgrImpl error messages \(024000\)](#)
- [AddressBookGroupCondMgr error messages \(006000\)](#)
- [GlobalAddrBookCondMgr error messages \(014000\)](#)
- [PersonalAddrBookCondMgr error messages \(018000\)](#)
- [PhoneNumberCondMgr error messages \(019000\)](#)
- [TimeBlockGroupCondMgr error messages \(029000\)](#)
- [BannedSubscriberMgrImpl error messages \(008000\)](#)
- [DomainCosMgrImpl error messages \(011000\)](#)
- [DomainProfileMgrImpl error messages \(012000\)](#)
- [TimeZoneMgrImpl error messages \(030000\)](#)
- [StatusReasonMgrImpl error messages \(027000\)](#)
- [ServiceMgrImpl error messages \(025000\)](#)
- [UserPropertiesServlet error messages \(036000\)](#)
- [UserDataMgrImpl error messages \(032000\)](#)
- [VoicemailMgrImpl error messages \(034000\)](#)
- [DeviceMgrImpl error messages \(010000\)](#)

Open Provisioning Interface Reference Guide

- [IPCMMgrImpl error messages \(016000\)](#)
- [UserTimeMgrImpl error messages \(033000\)](#)

Data-Access error messages (000000)

Error Code	Error Message
000000	The field(s): {0} must be unique
000001	Numeric value is too large. Please try with a smaller value.
000002	Entry can not be empty. Please provide a value.
000003	Entry can not be empty. Please provide a value.
000004	Value is too large. Please try with a smaller value.
000005	Value must be an integer. Please correct the entry and retry.
000006	Data unavailable (Data shutdown forcing disconnection). Please try again later.
000007	Data unavailable (Unable to connect to listener). Please try again later.
000008	Data unavailable (Internal error). Please try again later.
000009	Data unavailable (Connection refused - dispatcher is full). Please try again later.
000010	Data unavailable. Please try again later.
000011	Data unavailable. Please try again later.
000012	Data unavailable. Please try again later.
000013	Data unavailable (Unexpected end of channel). Please try again later.
000014	Data unavailable (Not connected). Please try again later.
000015	Data unavailable (Could not connect). Please try again later.
000016	Data unavailable (Lost primary connection). Please try again later.

Error Code	Error Message
000017	Data unavailable (Connection terminated). Please try again later.
000018	Constraint violated. Please consult documentation for these fields: {0}
000019	Constraint violated. Please consult documentation.
000020	Parent not found for {0}
000021	Cannot delete this entry. Child components are still referencing {0}
000022	Voicemail entry already exists. Please use a different value
000023	Cannot add device as the there is no capacity left for this IPCM:Domain relation=The field(s): {0} must be unique

DirectoriesImpl error messages (001000)

Error Code	Error Message
001000	Adding group for user {0} failed. Please provide a group name.
001001	Adding addressbook group Failed: {0}.
001002	Failed to create notify message for addressbook group change, please contact support for more information.
001003	Addressbook group information retrieval failed for user {0} : {1}
001004	The addressbook group information could not be retrieved: Data Access error, please contact next level of support for more information.
001005	Addressbook banned user information retrieval failed for user {0} : {1}
001006	The banned user information could not be retrieved for the user {0}. Data Access Error, Please contact support for more information.
001007	Addressbook group name information retrieval failed: {0}

Error Code	Error Message
001008	Group information retrieval failed, Data access error please contact support for more information.
001009	Adding groups failed, no groups were found for adding for user {0}.
001010	Groups could not be updated: Another group(s) with the same name(s) {0} exists.
001011	Updating group information failed. Data access error: {0}
001012	Adding banned user failed, banned username cannot be null.
001013	Adding banned entry Failed: {0}.
001014	Adding banned users failed, no entries were found for adding to ban list for user {0}.
001015	The banned user information could not be deleted: {0}
001016	Cannot modify group information, Group to be updated {0}, updated Group is {1}.
001017	Groups could not be updated: Another group(s) with the same name(s) {0} exists.
001018	Updating group information failed. Data access error {0}.
001019	Failed to create notify message for addressbook change, please contact support for more information.
001020	Initialization of data for address book failed. Unable to retrieve data.
001021	Removing group information failed. Data access error {0}.
001022	Unable to delete address book group because the following routes are still referencing it. Please remove the address book group from the following routes: {0}.

AddressBookImpl error messages (002000)

Error Code	Error Message
002000	The addressbook was not found for the user{0}
002001	The address book information could not be retrieved for user:{0} : {1}
002002	The address book information could not be retrieved : Data access error, please contact support for more information
002003	Addressbook friend information retrieval failed for user {0} : {1}
002004	Addressbook friend information retrieval failed for user {0} : Data access error, please contact support for more information
002005	The address book information could not be retrieved for user:{0} : {1}
002006	Addressbook friend information retrieval failed for user {0} Data access error, please contact support for more information
002007	The AddressBook Entry {0} to be deleted was not found.
002008	The address book entry information could not be deleted, {0}
002009	Failed to create notify message for addressbook change, please contact support for more information.
002010	Sorry cannot perform requested operation on entry, information on maximum number of friends and entries allowed could not be retrieved, please make sure you have Presence service as a part of your package
002011	Sorry cannot add entry {0} to list of friends, maximum number of friends allowed is {1}
002012	Removing friend information failed: {0}
002013	Removing friend information failed, please contact support for more information.

Error Code	Error Message
002014	{0} Cannot be added to list of friends, maximum number of friends allowed is {1}
002015	Cannot add entries: Maximum number of friends allowed could not be retrieved
002016	Adding entries failed, no entries were found for adding to addressbook for user {0}
002017	Adding address book entry information failed: Another entry with the nickname(s) {0} exists.
002018	Adding address book entry Failed for user {0} : {1}
002019	Failed to create notify message for addressbook change, please contact support for more information.
002020	Addressbook address information retrieval failed : {0}
002021	Addressbook address information retrieval failed: Data access error, please contact support for more information.
002023	Group information retrieval failed, Data access error, please contact support for more information.
002024	Addressbook information was not found for the user with nickname {0}
002025	Addressbook entry information retrieval failed for user {0} : {1}
002026	Address book ID information retrieval for user with nickname {0} failed: Data Access Error, please contact support for more information.
002027	Addressbook entry information retrieval failed: {0}.
002028	Address book ID information retrieval for user failed: Data Access Error, please contact support for more information.
002029	Addressbook nickname information for the user with Id information {0} was not found.
002030	Addressbook nickname information retrieval failed: {0}.
002031	Address book nickname information retrieval for user with Id {0} failed: Data Access Error, please contact support for more information.

Error Code	Error Message
002032	Initialization failure of data for Addressbook: This process is recoverable later.
002033	Failed to initialize data access components. Unable to proceed further.
002034	Data initialization for Addressbook information failed, cannot proceed further.
002035	Primary Contact and Nickname are required fields for an addressbook entry.
002036	Primary Contact cannot have - in it.
002037	The Maximum Friends parameter could not be retrieved.
002038	Cannot modify addressbook entries, nickname and addressbook entry information cannot be null.
002039	Cannot modify addressbook entries, number of nickname(s) and addressbook entries must be same.
002040	The AddressBook Entry {0} to be updated was not found.
002041	Cannot add entry {0} as friend : Maximum number of friends allowed is {0}.
002042	Updating address book entry failed: Another entry with the same nickname exists for the user {0}
002043	Updating address book entry Failed:Data access error, please contact support for more information.
002044	Address book entry photo information retrieval failed: Data access error, please contact support for more information.
002045	Address book entry information retrieval for user failed: Data Access Error, please contact support for more information.
002046	The addressbook information could not be deleted: {0}
002047	Addressbook group name information retrieval failed: {0}
002048	Group information retrieval failed,Data access error please contact support for more information.
002049	Addressbook information retrieval failed for user {0} : {1}

Error Code	Error Message
002050	The addresss book information could not be retrieved : Data Access Error, Please contact logs for more information.
002051	Failed to send notification of modification of addressbook, please contact support for more information.
002052	Your are allowed to have a maximum of {0} entries in your addressbook with your current service, please contact your provider for a service upgrade if you need to add more entries.
002053	Cannot add more than {0} to friend list, current number of friends is {1} number of friends requested to be added is {2}
002054	Cannot add entries: Maximum number of friends allowed could not be retrieved.
002055	Addressbook information retrieval failed for user {0} : {1}
002056	The addresss book information could not be retrieved :
002057	Addressbook nickname information retrieval failed: {0}
002058	Address book entry information retrieval for user {0} failed: Data Access Error, please contact support.
002059	Data access error, please contact support for more information.
002060	Adding friend information failed, {0}
002061	Invalid nickname provided cannot be null
002062	Your have exceeded the maximum number of entries allowed in your addressbook with your current service, please contact your provider for a service upgrade if you need to add more entries than {0}
002063	Error retrieving addressbook information for the groups provided {0}
002064	Error retrieving screened addressbook information for the user {0} and route {1} provided
002065	Error retrieving screened global addressbook information for the user {0} and for the route {1} provided

Error Code	Error Message
002066	Error retrieving personal addressbook information for user {0} : {1}
002067	Error retrieving global addressbook information {0}
002068	Error retrieving addressbook entry information based on information provided {0}

UserServicePkgImpl error messages (003000)

Error Code	Error Message
003000	Required field not found. Please provide the 'User Name'.
003001	Cannot find a Service Package for user {0}.
003003	Data retrieval failed: ServicePackage Information not found {0}.
003004	Invalid Service. User {0} does not have the service {1} in his/her service package. Please check the user service package.
003005	Invalid Parameter. User {0} does not have the service parameter {1} for the service {2} in his/her service package. Please check the user service package.
003006	Cannot modify user preferences as the Service Parameter {0} has a null value. Please provide a value.
003007	Cannot modify user preferences as the Service Parameter {0} has invalid value {1}. The valid values are {2}.
003008	Cannot modify user preferences as the Service Parameter {0} has a null value. Please provide a value.
003009	Cannot modify user preferences as the Service Parameter {0} is invalid.
003010	Operation failed. Root cause : {0}
003011	Operation failed. Cannot delete User Preferences, Root cause : {0}

Error Code	Error Message
003012	Required field not found. Please provide the 'User Name' and 'Service Object'.
003013	Error: Please contact your next level of support.
003014	Error: Failed to send Service Package change notification.

UserMgrImpl error messages (004000)

Error Code	Error Message
004000	Invalid User Name {0} .Please provide the fully qualified 'User Name' i.e user@domain.
004001	Invalid User. User {0} not found.
004002	Password cannot be null. Please provide a password.
004003	Invalid Password. Password cannot be greater than 20 characters.
004004	Invalid Password. Character: {0} is not allowed in password.
004005	Error.Please contact support for more information.
004006	Cannot perform operation as the user has an invalid username {0} in domain {1}.
004007	Cannot add/modify user without Status. Please provide the required value.
004008	Cannot add/modify user without Locale. Please provide the required value.
004009	Cannot add/modify user without Time Zone. Please provide the required value.
004010	Cannot add/modify user without Service Package. Please provide the required value.
004011	Cannot add/modify user without First Name and Last Name. Please provide the required values.

Error Code	Error Message
004012	Cannot add/modify user without User Name. Please provide the required value.
004013	The number of users requested/found is greater than the system limit {0}. Please change your search criteria or increase your system limit.
004014	Required Attributes are null. Please provide the required attributes.
004015	The query for Global Address Book cannot be completed. {0}
004016	Cannot perform query with the current parameters. Please reverify choices.
004017	Deleting user information failed as dependent data exists {0}. Please delete the child information.
004018	Deleting user information failed. Please contact support for more information.
004019	Invalid Password.
004020	Cannot modify User Information. {0}
004021	Cannot perform operation as User Name should be unique in a domain. Please use a different user name.
004022	Cannot perform operation as Status Reason {0} is invalid for user {1}.
004023	Cannot perform operation as Status {0} is invalid for user {1}.
004024	Cannot perform operation as Voicemail Server {0} is invalid for user {1}.
004025	Cannot perform operation as Class of Service {0} is invalid for user {1}.
004026	Cannot add users. {0}
004027	Cannot perform operation as Locale {0} is invalid for user {1}.
004028	Unable to add/modify user {0}. Voicemail Server specified without a valid Voicemail ID.

Error Code	Error Message
004029	Unable to add/modify user {0}. Voicemail ID specified without a valid Voicemail Server.
004030	Username cannot be the word voicemail, please try another username

DomainMgrImpl error messages (005000)

Error Code	Error Message
005000	Required field not found. Please provide the Domain name.
005001	Data retrieval failed: Domain Information not found {0}.
005002	Error: Please contact your next level of support.
005003	Required Attributes are null. Please provide the required attributes.
005002***	Invalid Domain. Domain {0} not found.
	note: in file there is mistake

RouteMgrImpl error messages (024000)

Error Code	Error Message
024000	Route information is required.
024001	User Name information is required.
024002	Route Name,Action information is required for this operation.
024003	Call Destination information is incomplete. Number of rings and destination addresses must be specified.
024004	Call Destination information is incomplete. Number of rings and destination addresses must be specified.

Error Code	Error Message
024005	Reject Reason information is required for this operation.
024006	Adding new routes information failed: {0}
024007	Route Names information is required.
024008	Route Name information is required for this operation.
024009	Modification of Route information failed: {0}
024010	Retrieving route information failed: There was a problem with the data store while trying to retrieve the information.
024011	New Route information is required.
024012	Modifying new routes information failed: {0}
024013	Removing route information failed: {0}
024014	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.
024015	{0} is not a valid Term Action Name. The valid names are: {1}
024016	Term Action name is null.
024017	Retrieving reject reason information failed: There was a problem with the data store while trying to retrieve the information.
024018	Call Destination information is incomplete. Number of rings and destination addresses must be specified.
024019	Retrieving call destination information failed: There was a problem with the data store while trying to retrieve the information.

AddressBookGroupCondMgr error messages (006000)

Error Code	Error Message
006000	Address Book Group names information is necessary for an Address Book Group {0}.
006001	Retrieval of Address Book Group information failed. There was a problem with the data store while trying to retrieve the information.
006002	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.

GlobalAddrBookCondMgr error messages (014000)

Error Code	Error Message
014000	User Name information is necessary for a Global Address Book {0}.
014001	Retrieval of Global Address Book information failed. There was a problem with the data store while trying to retrieve the information.
014002	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.

PersonalAddrBookCondMgr error messages (018000)

Error Code	Error Message
018000	NickName information is necessary for a Personal Address Book {0}.
018001	Retrieval of Personal Address Book information failed. There was a problem with the data store while trying to retrieve the information.
018002	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.

PhoneNumberCondMgr error messages (019000)

Error Code	Error Message
019000	Telephone Number information is necessary for a Phone Number {0}.
019001	Retrieval of Phone Number information failed. There was a problem with the data store while trying to retrieve the information.
019002	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.

TimeBlockGroupCondMgr error messages (029000)

Error Code	Error Message
029000	TimeGroup names information is necessary for a Time Block {0}.
029001	Retrieval of Time Block information failed. There was a problem with the data store while trying to retrieve the information.
029002	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.

BannedSubscriberMgrImpl error messages (008000)

Error Code	Error Message
008000	Banned Subscriber information is required.
008001	Domain information is required.
008002	Removing banned subscriber information failed: {0}
008003	Banned Subscriber Party information is required for this operation.
008004	Adding new banned subscriber information failed: {0}

Error Code	Error Message
008005	Retrieving banned subscriber information failed. There was a problem with the data store while trying to retrieve the information.
008006	Banned subscribers to be deleted information is required.
008007	Removing banned subscriber information failed: {0}
008008	Failed to initialize data access components: Unable to proceed further.Please contact your next level of support.

DomainCosMgrImpl error messages (011000)

Error Code	Error Message
011000	Domain information is required.
011001	Class of Service information is required.
011002	Class of Service Name information is required for this operation.
011003	Modification of domain COS information failed: {0}
011004	Removal of domain COS information failed: {0}
011005	Retrieving domain COS information failed. There was a problem with the data store while trying to retrieve the information.
011006	Initialization of Domain COS information data failed. There was a problem with the data store while trying to retrieve the information.
011007	Invalid Data: Domain not found:{0}
011008	Could not retrieve domain information
011009	Failed to refresh caches: Unable to proceed further.
011010	Failed to initialize. Unable to proceed further.Please contact your next level of support.

DomainProfileMgrImpl error messages (012000)

Error Code	Error Message
012000	Removal of domain profile failed: {0}
012001	Domain information is required.
012002	Profile information is required for this operation.
012003	Modification of domain profile failed:{0}
012004	Data retrieval failed: DomainProfile was not found.
012005	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.

TimeZoneMgrImpl error messages (030000)

Error Code	Error Message
030000	TimeZone Name information is required.
030001	TimeZone ID information is required.
030002	TimeZone ID and Name information is required.
030003	Adding new timezone information failed:{0}
030004	Removing timezone information failed: {0}
030005	Existing TimeZone Name information is required.
030006	Modifying timezone information failed: {0}
030007	Retrieving time zone information failed. There was a problem with the data store while trying to retrieve the information.
030008	Invalid Data: TimeZone not found:{0}
030009	Initialization of time zone information failed. There was a problem with the data store while trying to retrieve the information.

Error Code	Error Message
030010	Failed to refresh caches: Unable to proceed further.
030011	Failed to initialize data access components: Unable to proceed further. Please contact your next level of support.

StatusReasonMgrImpl error messages (027000)

Error Code	Error Message
027000	Status Reason information is required
027001	Removing status reason information failed: {0}
027002	Domain information is required.
027003	Status information is required.
027004	Status Reason Name information is required for this operation.
027005	Status Reason not found. Please retrieve the list of acceptable values and try again.
027006	No Status Reasons found for this domain.
027007	Modification of status reason information failed: {0}
027008	Status Reason Name is null. Please enter a valid value.
027009	Adding new status reason information failed: {0}
027010	Null Status.The valid values for Status are: {0}
027011	Invalid Data.The valid values for Status are: {0}
027012	Retrieving status reason information failed. There was a problem with the data store while trying to retrieve the information.
027013	Invalid Data: Status not found: {0}
027014	Initialization of Status information data failed. There was a problem with the data store while trying to retrieve the information.

Error Code	Error Message
027015	Could not retrieve domain information.
027016	Failed to refresh caches. Unable to proceed further.
027017	Failed to refresh Status Reason cache: Unable to proceed further.
027018	Failed to initialize data access components: Unable to proceed further.Please contact your next level of support.

ServiceMgrImpl error messages (025000)

Error Code	Error Message
025000	Service name needs to be specified.
025001	Invalid Parm value: {0} for parm: {1}. Please refer to the list of acceptable values for this parm.
025002	Adding new domain services information failed for domain: {0}. {1}
025003	Removing domain services information failed for domain: {0}. {1}
025004	Service name is not valid: {0}
025005	Modifying domain services information failed for domain: {0}. {1}
025006	Unable to update Service Definition. Only parameters with multiple values can be updated.
025007	Unable to update Service Definition. The following parm values are in use by some domains: {0}. These entries must be either removed from use or added to the update list.
025008	Modifying services information failed for service: {0}. {1}
025009	This parm value: {0} does not exist for this parm {1}.
025011	Updating parm default value failed for service: {0}, parm: {1}. {2}

Error Code	Error Message
025012	This service expects {0} number of entries. The entries to be made are: {1}
025013	Adding new domain services information failed. {0}
025014	Modifying domain services information failed. {0}
025015	Retrieving parm names information failed. There was a problem with the data store while trying to retrieve the information.
025016	Initialization of service names data failed. There was a problem with the data store while trying to retrieve the information.
025017	Data retrieval failed for domain services.
025018	Retrieving domain services information failed. There was a problem with the data store while trying to retrieve the information.
025019	Retrieving parmlistdata information failed. There was a problem with the data store while trying to retrieve the information.
025020	Initialization of service parms data failed. There was a problem with the data store while trying to retrieve the information.
025021	Cannot find a service with name {0}.
025022	Cannot find a parm with name {0}.
025023	{0} is not a valid service name. The valid service names are: {1}
025024	Service Name is null.
025025	{0} is not a valid parm name. The valid parm names for the service {1} are: {2}
025026	Initialization of services+parm names data failed. There was a problem with the data store while trying to retrieve the information.
025027	{0} is not a valid parm name.

Error Code	Error Message
025028	The parameter value for the {0} parm cannot be assigned at this stage.It can only be changed while customizing a service package for a user. Please try again with a blank parameter value.
025029	The value for {0} is invalid, please provide a value between {1} - {2}
025030	Failed to refresh caches. Unable to proceed further.
025031	Failed to initialize data access components: Unable to proceed further.Please contact your next level of support.
025032	Parm information must be entered in the correct format.
025033	Domain information is required.
025034	The service(s):{0}cannot be assigned to this sub-domain. Only services that are assigned to the parent domain can be assigned to the child domain. The valid services are: {1}
025035	To enable Inactivity feature, Report Inactivity has to be enabled with an Inactivity timer (in minutes) value

UserPropertiesServlet error messages (036000)

Error Code	Error Message
036000	Error uploading file. File size for {0} (size= {1}KB) exceeds picture file size limit of {2}KB.
036001	Error uploading file. Empty file: {0}.
036002	No picture file uploaded.
036003	Error in modifying picture. Please contact your next level of support.
036004	The user picture format can only be of type PNG, JPG or JPEG.

UserDataMgrImpl error messages (032000)

Error Code	Error Message
032001	Adding reject reason failed: Reason cannot be null
032002	Adding reject reason failed: {0}
032003	UserData information retrieval failed: {0}
032004	Retrieve operation failed: Data access error, please contact support for more information
032005	Deleting userdata failed for user {0} : {1}
032006	Deleting reject reason failed for user {0} : {1}
032007	Updating userdata failed : User Data Cannot be null
032008	The maximum number of presence notes allowed is five. Please edit the entries as required
032009	Length of presence note cannot be greater than 32 characters.
032010	Updating userdata failed for user {0} : {1}
032011	{0} is not a valid character. Please try again.

VoicemailMgrImpl error messages (034000)

Error Code	Error Message
034001	Domain information cannot be null
034002	Voicemail server information retrieval failed for domain {0} : {1}
034003	The voicemail server could not be retrieved: DataAccess error please contact support for more information

DeviceMgrImpl error messages (010000)

Error Code	Error Message
010000	Retrieving device information failed.
010001	Cannot add/modify device as the device does not have a macaddress.Please provide a macaddress.
010002	Cannot add/modify device as the device has an invalid macaddress {0}.Macaddress should be less than 12 characters in length.
010003	Cannot add/modify device as the device with macaddress {0} does not have the required attributes.Please provide the required attributes.
010004	Invalid Data.Device with macaddress {0} not found.Please check the device macaddress.
010005	Required Attributes are null.Please provide the required attributes.
010006	User {0} not logged into device.
010007	The number of devices requested/found is greater than the system limit {0}. Please change your search criteria or increase your system limit.
010008	Deleting device information failed as dependent data exists {0}. Please delete the child information.
010009	Deleting device information failed. Please contact support for more information.
010010	Modifying device information failed. Please contact support for more information.
010011	Cannot modify device as there is no capacity left on the IPCM:Domain relation i.e {0}:{1} to which this device belongs to.
010012	Invalid Data. MacAddress {0} already in use. Please use a different one as macaddress should be unique.
010013	Cannot assign user {0} to device with macaddress {1} as the User does not belong to the IPCM:Domain relation to which the device belongs to.

Error Code	Error Message
010014	Invalid Data. Invalid device contrast {0}. The valid values are {1}.
010015	Invalid Data. Invalid device Vocoder {0} or Packet Time {1}.
010016	Invalid Data. Invalid device Time Format {0}. The valid values are {1}.
010017	Invalid Data. Invalid device Date Format {0}. The valid values are {1}.
010018	Invalid Data. Invalid device Locale {0}. The valid values are {1}.
010019	Cannot add/modify device with macaddres {0} as there exists no relation between the domain {1} and device IPCM {2}.
010020	Cannot modify device as the device macaddress {0} and the given macaddress {1} do not match.
010021	Add device failed. Please contact support for more information.
010022	Cannot add device as there is no capacity left on the IPCM:Domain relation to which this device belongs to.
010023	Cannot assign user {0} to device with macaddress {1} as the user does not belong to the IPCM:Domain relation to which the device belongs to.

IPCMMgrImpl error messages (016000)

Error Code	Error Message
016000	Required Attributes are null.Please provide the required attributes.
016001	Invalid Data.IPCM with name {0} not found.
016002	Invalid Data.IPCM with ID {0} not found.
016003	Retrieving IPCM information failed. {0}

Error Code	Error Message
016004	Cannot assign user to IPCM {0} as it is not assigned to Domain {1}
016005	Cannot assign users to IPCM as there are no IPCMs assigned to this Domain {0}
016006	Retrieving IPCM information failed.

UserTimeMgrImpl error messages (033000)

Error Code	Error Message
033001	Adding Timeblock Group information for user {0} failed: {1}
033002	Removing Timeblock Group for user {0} failed. Timeblock Group name cannot be null.
033003	Removing Timeblock Group {0} failed. User name cannot be null.
033004	Removing Timeblock Group {0} failed. The Timeblock Group is referenced in route(s) {1}.
033005	Removing Timeblock Group {0} for user {1} failed: {2}
033006	Removing Timeblock Groups failed. User name cannot be null.
033007	Removing Timeblock Groups for user {0} failed: {1}
033008	Modifying Timeblock Group {0} failed. Timeblock Group information cannot be null.
033009	Modifying Timeblock Group failed. Timeblock Group name cannot be null.
033010	Modifying Timeblock Group {0} failed. User name cannot be null.
033011	Modifying Timeblock Group {0} for user {1} failed: {2}
033012	Retrieving Timeblock Group for user {0} failed. Timeblock Group name cannot be null.

Error Code	Error Message
033013	Retrieving Timeblock Group failed. User name cannot be null.
033014	Retrieving Timeblock Group {0} for user {1} failed: {2}
033015	Retrieving Timeblock Groups for user {0} failed: {1}
033016	Retrieving Timeblock Groups failed. User name cannot be null.
033017	Adding Timeblock Group information failed. User name cannot be null.
033018	Adding Timeblock Group information for user {0} failed. Timeblock Group information cannot be null.
033019	Adding time blocks for TimeBlock Group {0} failed. Please verify that the time blocks were specified properly.
033020	Adding time blocks for TimeBlock Group {0} failed. Timeblock information cannot be null.
033021	Adding time blocks for TimeBlock Group {0} failed: {1}
033022	Unable to process request for TimeBlock Group: {0}
033023	Timeblock Group {0} was not found for user {1}.
033024	Error retrieving Timeblock Group Information for user {0}. Root cause: {1}
033025	Adding time block failed. At least one day of the week must be specified for time block.
033026	Adding time block failed. Time block start time cannot be null.
033027	Adding time block failed. Time block stop time cannot be null.
033028	Adding time block failed. The minute value in the start time must be either 0, 15, 30, or 45.
033029	Adding time block failed. The minute value in the stop time must be either 0, 15, 30, or 45.
033030	Adding time block failed. The start and stop time should correspond to valid intervals on the same day.

Error Code	Error Message
033031	Error retrieving time block information for Timeblock Group {0}. Root cause: {1}
033032	Retrieving Timeblock Group failed: {0}
033033	Error retrieving Timeblock Group Information for user {0}.
033034	Retrieving Timeblock Group(s) for user {0} failed.
033035	Error retrieving time block information for Timeblock Group {0}.
033036	Retrieving Timeblock Group failed.
033037	Timeblock Group information could not be added for user {0}. Timeblock Group(s) already exists using name(s) {1}
033038	Timeblock Group information could not be modified for user {0}. A Timeblock Group already exists using name {1}
033039	Adding Timeblock Group information for user {0} failed. Timeblock Group name cannot be null.
033040	Removing Timeblock Groups for user {0} failed. The following Timeblock Groups are referenced by the listed routes: {1}

Multimedia Communication Portfolio

Multimedia Communication Server

Open Provisioning Interface

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Publication number: NN42020-123

Product release: MCS 5100 3.5

Document version: Standard 4.0

Date: January 2006



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