



Business  
Services

# Device Capabilities API for .NET

## SDK Manual

# Device Capabilities API for .NET: SDK Manual

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## Revision History

Revision 1.1.3-000	2009/09/01
• Introducing Service Account Password.	
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• Document review.	
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• Added the section §3.5 about SDK configuration.	
• Added the ConfigurationException.	
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# Preface

Welcome to the Device Capabilities Enabler SDK manual!

This manual is a collection of topics related to develop code using all the advanced features of Orange™ Device Capabilities Enabler API with our SDK.

By the end of this manual you will be able to retrieve relevant information on the device capabilities using the toolkit (SDK) we've built for an easy integration within your applications. Our SDK has been designed to hide all the complexity of the underlying WebService communication and to help leverage the power of Object Oriented Programming.

You will first learn how to setup your machine, then how to configure the SDK and finally how to use every single methods provided by the API.

You will find some code snippets that are ready to go, just copy and paste the code into your favorite IDE!

# Chapter 1. Overview

## 1. Features

A very significant and growing number of different devices are used by Orange customers, each one of them possessing varying characteristics. In order to propose and deliver services best suited to the end-user devices, it is required to have at your disposal the relevant information on the device's capabilities. The Device Capabilities Enabler project is focused on offering a platform fulfilling all the identified needs in terms of device capabilities for the Orange Group.

Device Capabilities Enabler offers the following services:

- get capabilities by name. This service returns the device capabilities of a given device, by providing the device model name and the brand name as search key.
- get capabilities by User-Agent. This service returns the device capabilities of a given device, by providing the User-Agent as key search.
- get capabilities by TAC code. This service returns the device capabilities of a given device, by providing the device TAC Code as key search.

## 2. Concepts

### 2.1. An up-to-date database

Using this API, your application will always be up-to-date with the device capabilities.

### 2.2. What are the benefits for you?

- Services and content requested always best suited to your device's capabilities clients
- New services proposed in accordance to device's capabilities clients
- Marketing choices can be oriented by the availability of certain capabilities among the customers' devices
- Support for using and configuring their devices can be provided to the customers

# Chapter 2. Prerequisites

Before getting started, please read the information of this document, and follow any installation / download instructions. You'll be then ready to move onto the 'getting started' section.

In this chapter you will learn how to get your credentials. Then, we will explain how to have a well configured .NET environment.

## 1. What you need to consume DCE web service

To access the Device Capabilities Enabler API, you first have to get from the Orange Partner platform some credentials. Once you have these items, please keep them, they will be necessary to access the Device Capabilities Enabler API.

### 1.1. API access credentials needed

This section focuses on how to access the API and consume the webservice.

Developing with the API, you'll need:

- *Service URL*: the URL to consume the webservice (the URL for the trial API may be different from the one for the live API)
- *Service Account* and *Service Account Password*: you have one API Service Account and one API Service Account Password per API and you can get them by signing in Orange Partner portal and going to the API section.
- *Access Key* and *Access Key Password* for basic authentication.

You can retrieve (or create) the above in the **\*\*API Manager\*\*** area.

### 1.2. DCE requirements

You will need the relevant end point URL when using the API. You need to use different URLs for different stages of your development.

The following table recaps the WSDL endpoint locations depending on the mode you are working with.

**Table 2.1. Which endpoint should I use?**

Mode	URL
Develop (trial API)	<a href="https://iosw.orange-api.net/api/DeviceCapabilities-1">https://iosw.orange-api.net/api/DeviceCapabilities-1</a>
Manage (commercial API)	<a href="https://iosw.orange-api.net/api/DeviceCapabilities-1">https://iosw.orange-api.net/api/DeviceCapabilities-1</a>

## 2. Manage certificates

### 2.1. Secured Communication

HTTPS (Hypertext Transfer Protocol over Secure Socket Layer, or HTTP over SSL) is a Web protocol designed to encrypt and decrypt page requests as well as the pages that are returned by the Web server.

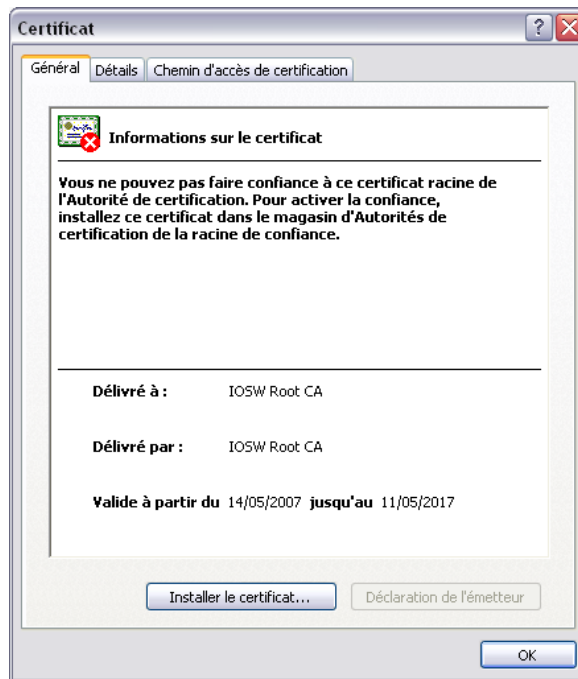
The communication between your machine and the API will be secured by a SSL server certificate over the regular HTTP protocol. Practically this means you will have to go through HTTPS endpoints and you will have to use the SSL certificate we've made available for you. It is named `orangeapi.cer`.

## 2.2. Use a certificate in .NET

.NET uses the Windows certificate store, thus, you have to install the Orange API certificates on your computer:

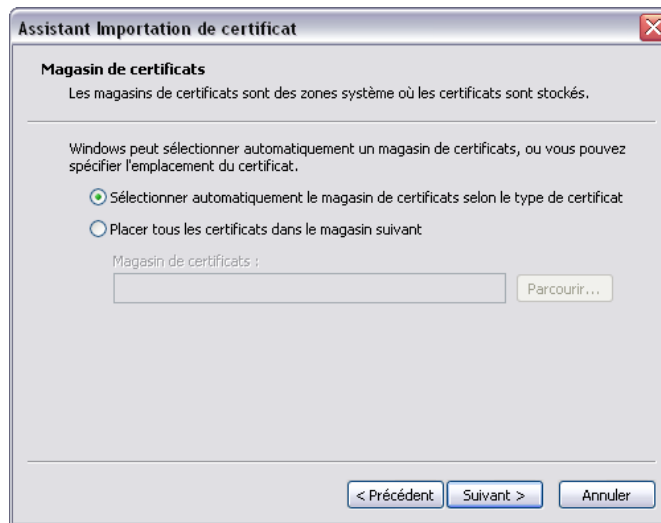
- First, download the Orange API certificates (`orangeapi.cer` and `orangeapiroot.cer`) from the Orange Partner website.
- Then, double-click on the root certificate (`orangeapiroot.cer`) to start the installation process:

**Figure 2.1. Certificate installation - step 1**



Click on the "Install the certificate" button and follow the on-screen instructions.

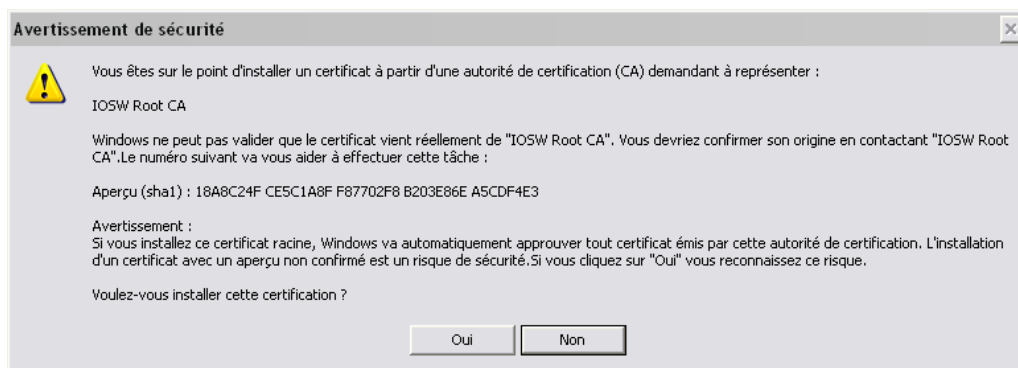
**Figure 2.2. Certificate installation - step 3**



Let Windows choose the appropriate certificate store and click "Next".

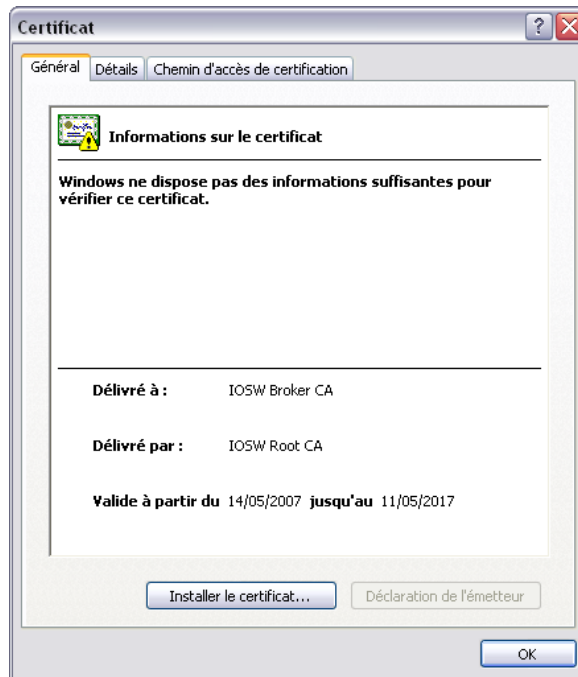
Validate your parameters by clicking the "Finish" button. A message box will ask you to confirm the installation of the root certificate in the certification authority store:

**Figure 2.3. Certificate installation - step 5**



Accept by clicking "Yes". Windows will automatically install the certificate for you.

- Finally, double-click on the broker certificate (`orangeapi.cer`) to start the installation process and follow the previous instructions.

**Figure 2.4. Certificate installation - step 1**

You are now ready to use the Orange API through HTTPS.

As for now, the server certificate is not valid. Therefore, you have to make your application trust this certificate by adding the following lines:

```
//Add the following line once before using the Orange APIs (at start-up in the main method
for example)
ServicePointManager.ServerCertificateValidationCallback
= new
System.Net.Security.RemoteCertificateValidationCallback(RemoteCertificateValidationCB);

//Add the RemoteCertificateValidationCB method
public static bool RemoteCertificateValidationCB(Object sender,
System.Security.Cryptography.X509Certificates.X509Certificate cert,
System.Security.Cryptography.X509Certificates.X509Chain chain,
System.Net.Security.SslPolicyErrors Errors)
{
//You can add security controls here.
return true;
}
```

### 3. .NET environment

In order to use our SDK, you must have the .NET framework 3.5 installed on your system. You can find .NET framework downloads on [Microsoft](http://Microsoft) website.

We encourage you to use Integrated Development Environment (IDE) which will ease your everyday work with programming.

You can obviously use Microsoft Visual Studio 2008 if you have already registered a copy.

You can also download free IDE like [Microsoft Visual Studio Express Editions](#), [SharpDevelop](#) or [MonoDevelop](#).

## 4. Proxy and firewall settings

In order to use our APIs, you have to check your proxy and firewall settings.

The firewall basically inspects network traffic passing through it. It may deny passage based on how rules have been set by your system administrator. We recommend to first check with the administrator if the port is open and if the URL request won't be blocked. Once the proxy and firewall are well set, we encourage you to test the connectivity with a simple function that takes no parameter (or a few easy-to-build parameters) and just returns a string. This will allow you to verify that everything is working fine.

# Chapter 3. Install and Setup

To kick-start your development download the .NET SDK. The reference manual (generated by Sandcastle) is also available in the ZIP of the SDK.

## 1. Install SDK

You can use the SDK in your main application project either by creating a new project in your solution including the shipped sources and referencing it, or by directly referencing the shipped libraries.

The SDK contains the following libraries:

- `Orange.Api.Common.dll` and `Orange.Api.DeviceCapabilities.dll` (the core libraries),
- `log4net.dll` from the [Apache Logging Services project](#) to add logging capabilities to your application.

These libraries are all mandatory.

## 2. Configure SDK

The SDK is shipped with a configuration file that stores all settings required to access the Device Capabilities API:

- the web proxy settings: `proxyHost`, `proxyPort`, `proxyUsername` and `proxyPassword`,
- the `serviceUrl`,
- the access credentials: `accessKey`, `accessKeyPassword`, `serviceAccount` and `serviceAccountPassword`.

The configuration file is named `dce.config` by default and is located at the root of your application.

### Example 3.1. Example of the `dce.config` configuration file.

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <appSettings>
    <!-- HTTP Proxy Configuration -->
    <add key="disableProxy" value="false" />
    <add key="proxyHost" value="your_proxy_host" />
    <add key="proxyPort" value="your_proxy_port" />
    <add key="proxyUsername" value="your_proxy_username" />
    <add key="proxyPassword" value="your_proxy_password" />

    <!-- DCE Service URL -->
    <add key="serviceUrl" value="your_service_url" />

    <!-- DCE Credentials -->
    <add key="accessKey" value="your_access_key" />
    <add key="accessKeyPassword" value="your_access_key_password" />
    <add key="serviceAccount" value="your_service_account" />
    <add key="serviceAccountPassword" value="your_service_account_password" />
  </appSettings>
</configuration>
```

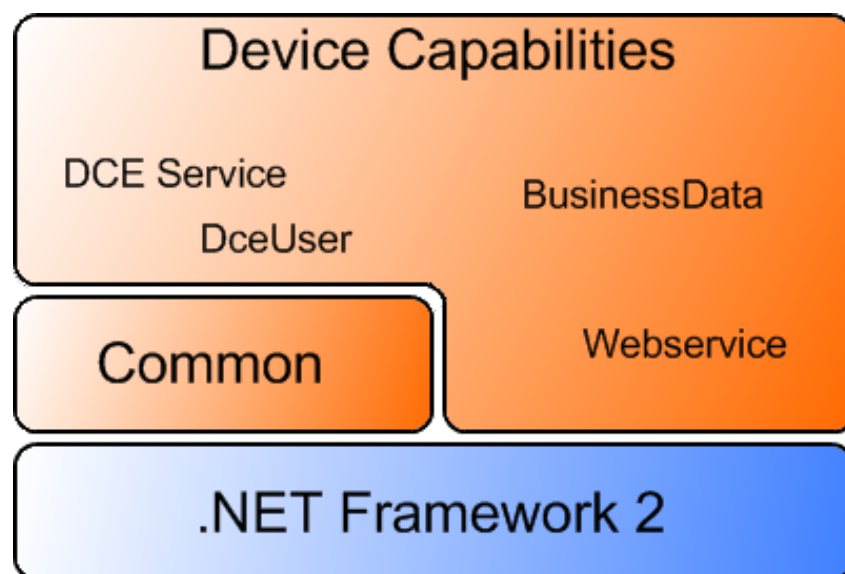
This configuration file is not mandatory (you can set all required parameters programmatically), but we encourage you to use it as it greatly eases the maintainability of your application.

# Chapter 4. The Device Capabilities SDK

Hereafter is described a global view of the DCE Sdk architecture. Basically, the DCE Sdk is based on the Microsoft .NET Framework 2 and is composed of:

- Common: this library contains reusable classes in the Open Developer Network context.
- Device Capabilities: this library contains
  - the DCE Service with static access to the Device Capabilities API webmethods.
  - the `DceUser` class, an abstraction of a user of the Device Capabilities API, encapsulating authentication data.
  - the `BusinessData` namespace, a business model that lets the developer get quickly involved in the Device Capabilities API
  - the `Webservice` namespace, a communication layer with SOAP client and types definitions.

Figure 4.1. Diagram of the global architecture of the DCE Sdk

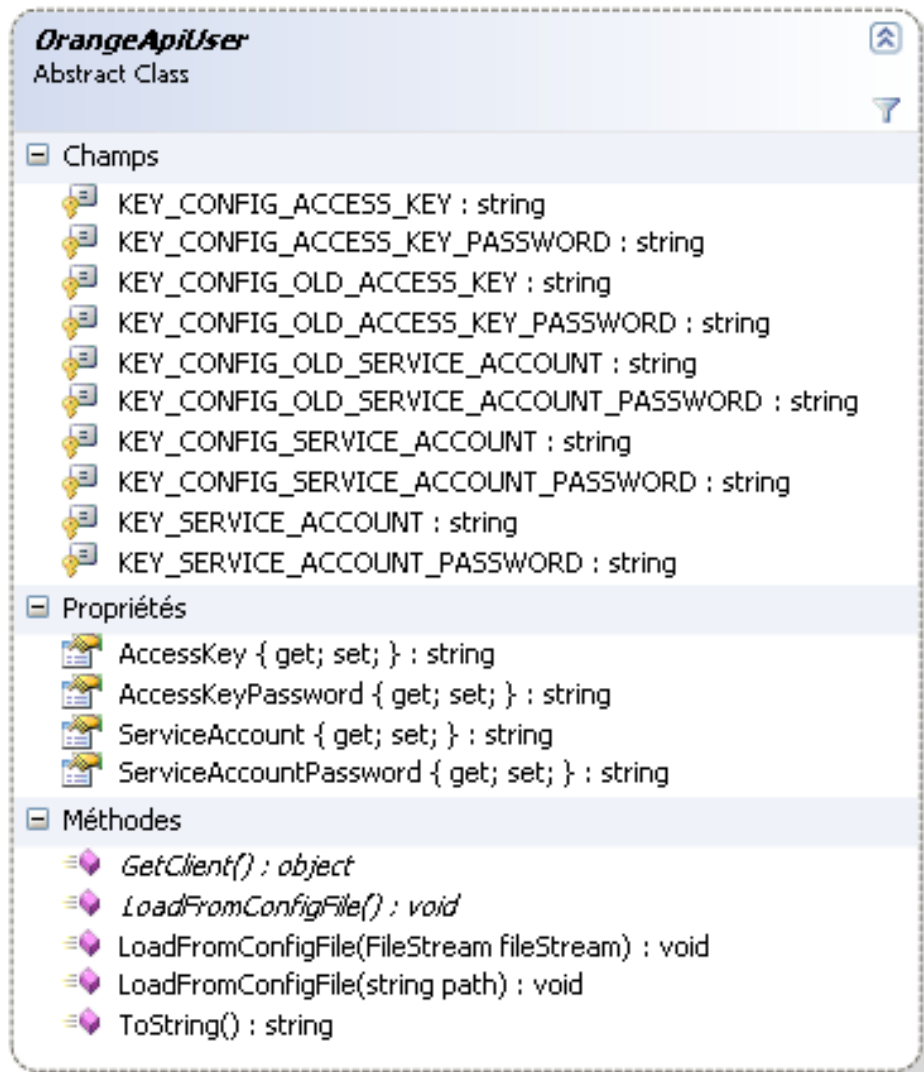


## 1. Orange.Api.Common namespace

The `Orange.Api.Common` namespace contains four classes.

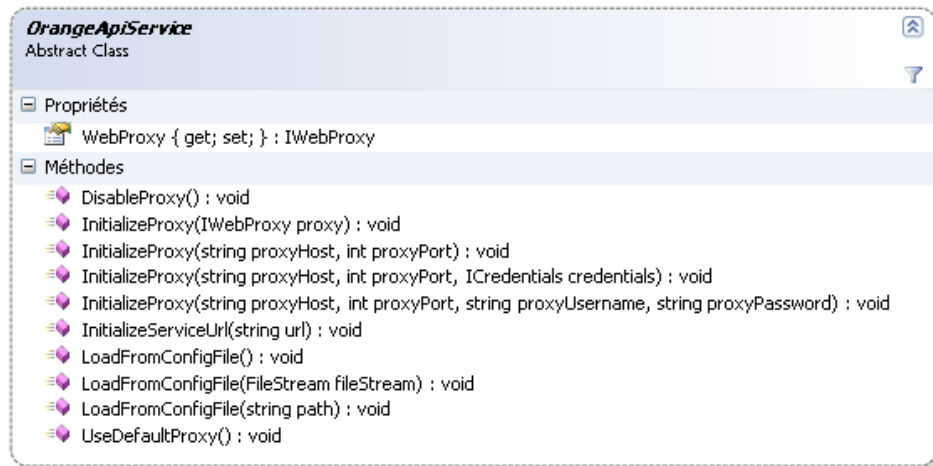
- `OrangeApiUser`: this class encapsulates the authentication data required by the Orange APIs, that is to say the HTTP basic auth credentials (the `AccessKey` and `AccessKeyPassword` properties), the service account (the `ServiceAccount` property) and the service account password (the `ServiceAccountPassword` property). The `GetClient` abstract method is overridden by each Orange APIs to get a valid and configured web client.

Figure 4.2. `OrangeApiUser` class diagram.



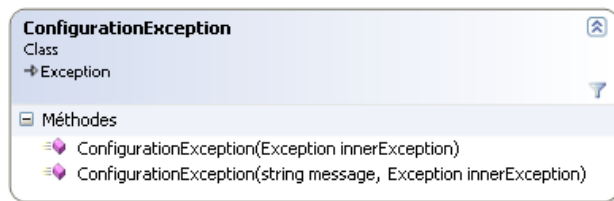
- `OrangeApiService`: this class encapsulates static initialization methods such as proxy configuration.

**Figure 4.3. OrangeApiService class diagram.**



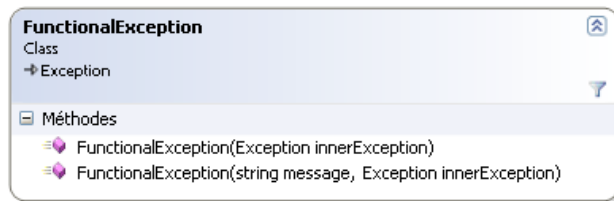
- ConfigurationException: this class encapsulates configuration exceptions that occurred while using Orange APIs.

**Figure 4.4. ConfigurationException class diagram.**



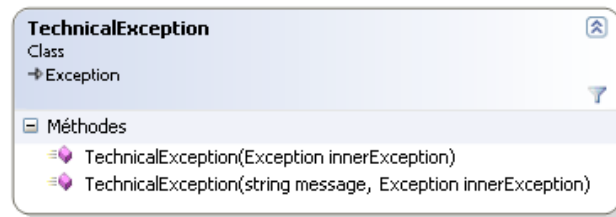
- FunctionalException: this class encapsulates functional exceptions that occurred while using Orange APIs.

**Figure 4.5. FunctionalException class diagram.**



- TechnicalException: this class encapsulates technical exceptions that occurred while using Orange APIs.

**Figure 4.6. TechnicalException class diagram.**

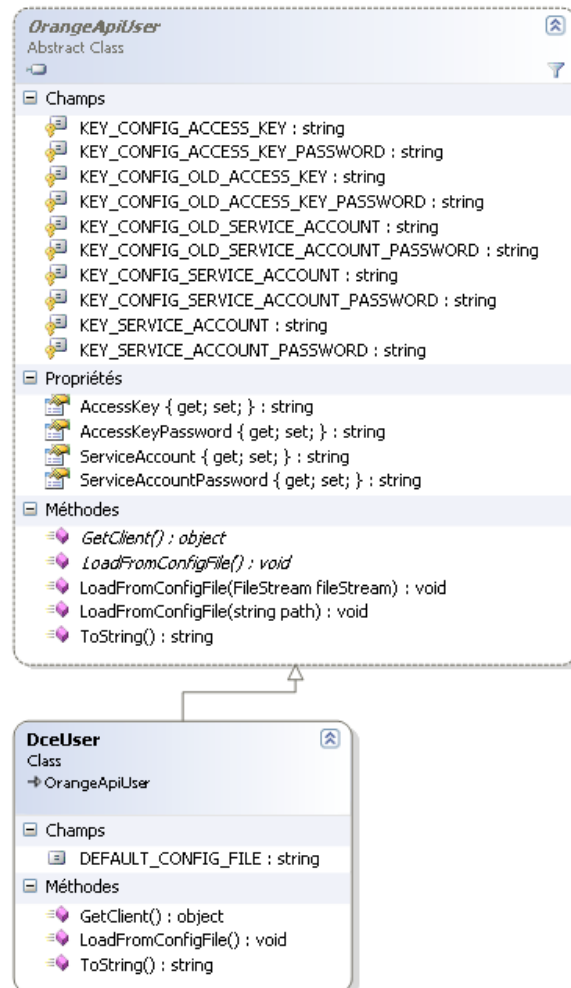


## 2. Orange.Api.DeviceCapabilities namespace

The Orange.Api.DeviceCapabilities namespace contains three classes.

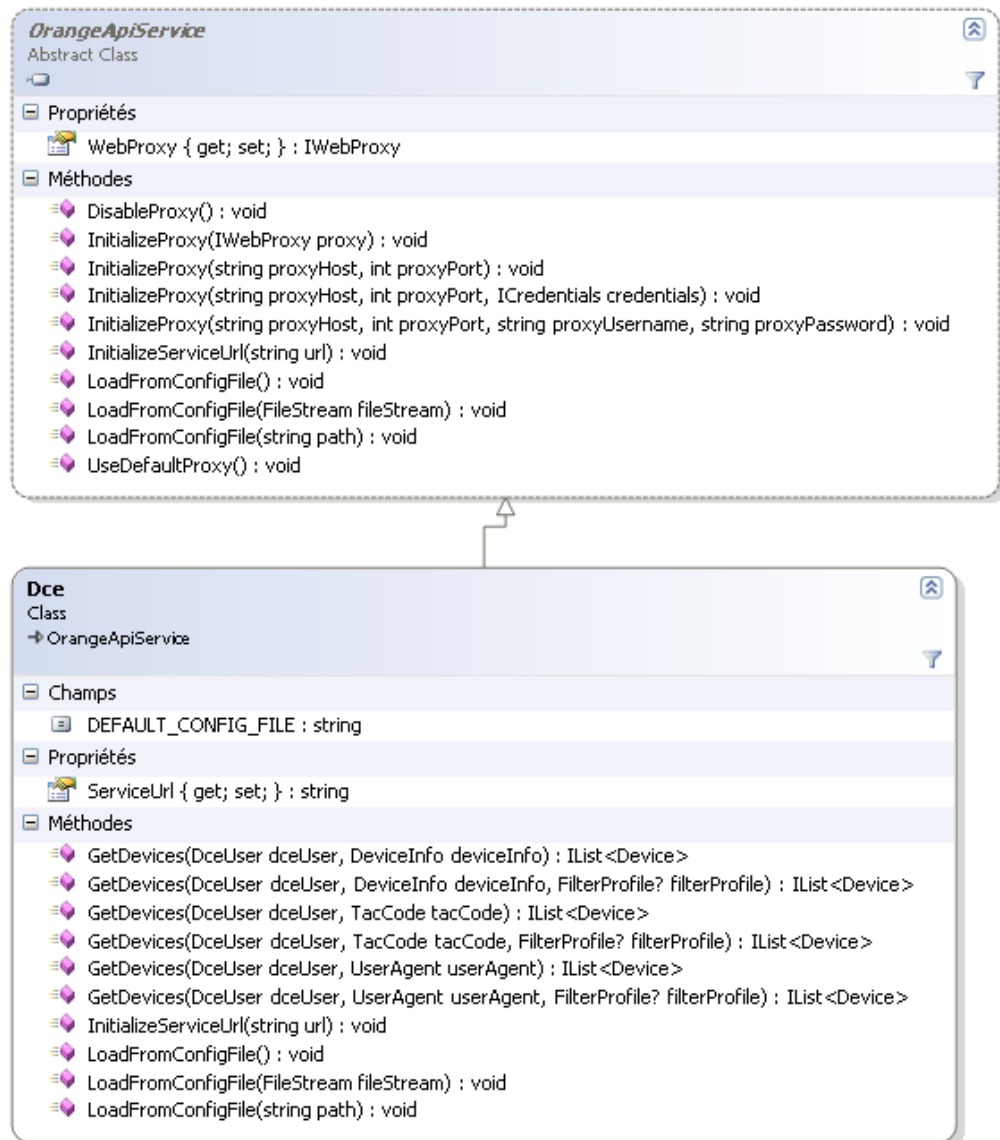
- `DceUser`: this class represents a user of Device Capabilities. It inherits from the `Orange.Api.Common.OrangeApiUser`.

**Figure 4.7. DceUser class diagram.**



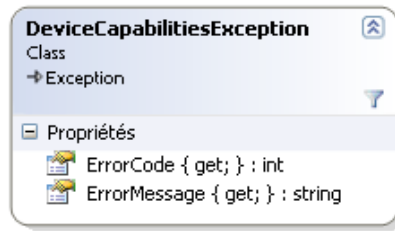
- Dce: this class represents a simple entry point to call webmethods of the Device Capabilities API. It inherits from the Orange.Api.Common.OrangeApiService, thus encapsulates static initialization methods. Moreover, it provides one business method plus five overrides:
  - GetDevices: this method returns the information and capabilities of the devices matching your search criteria: the brand and model names, the user agent or the TAC code.

**Figure 4.8. Dce class diagram.**



- DeviceCapabilitiesException: this class represents a SOAP fault sent by the Device Capabilities API. You can retrieve the error code and the error message from its properties.

**Figure 4.9. DeviceCapabilitiesException class diagram.**

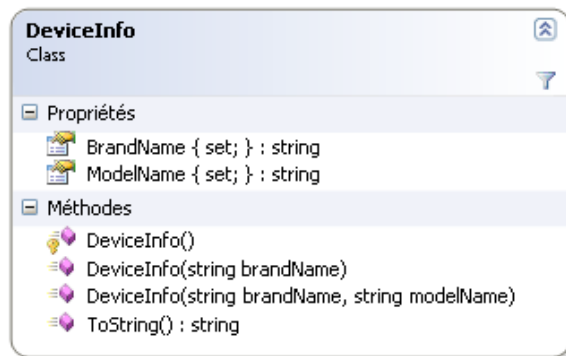


### 3. Orange.Api.DeviceCapabilities.BusinessData namespace

The Orange.Api.DeviceCapabilities.BusinessData namespace provides an abstraction layer to send and retrieve data to/from the DCE API. It contains four classes and one enumeration.

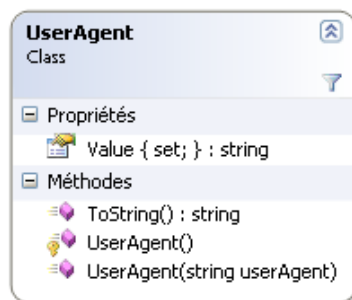
- DeviceInfo: this class stores the brand and model names for the Device Capabilities API.

**Figure 4.10. DeviceInfo class diagram.**



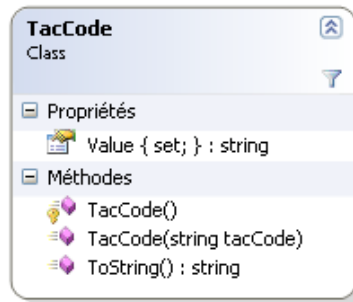
- UserAgent: this class represents a user agent for the Device Capabilities API.

**Figure 4.11. UserAgent class diagram.**



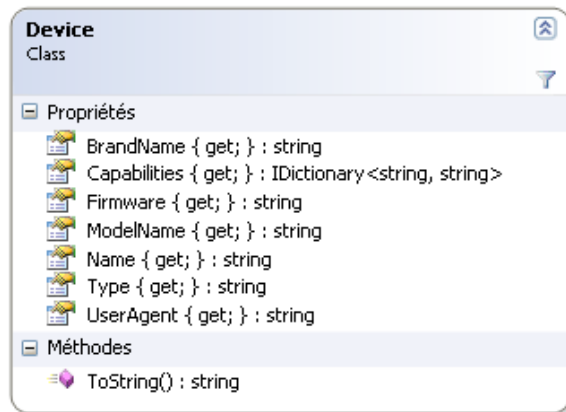
- TacCode: this class represents a TAC code for the Device Capabilities API.

**Figure 4.12. TacCode class diagram.**



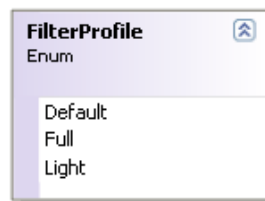
- `Device`: this class represents a device returned by the Device Capabilities API. It stores the device name, the brand name, the model name, the firmware version, the type, the user agent and the capabilities.

**Figure 4.13. Device class diagram.**



- `FilterProfile`: this enumeration represents the different filter profiles available in the DCE API.

**Figure 4.14. FilterProfile class diagram.**



## 4. Orange.Api.DeviceCapabilities.Webservice namespace

The `Orange.Api.DeviceCapabilities.Webservice` namespace contains classes automatically generated from the WSDL file by the `wsdl.exe` tool included in the Microsoft .NET Framework 2 SDK.

## 5. SDK configuration

Before requesting the Device Capabilities API through the SDK, you must initialize `Dce` and `DceUser` classes:

- settings for `Dce` class:
  - the web proxy: you can disable the web proxy, use the default Windows proxy or specify your own proxy.
  - the service URL.
- settings for `DceUser` class:
  - the access key and the access key password for HTTP basic auth.
  - the service account and the service account password for the Orange mediation platform.

You can do it either by using the `dce.config` configuration file described above or by setting programmatically properties of the objects.

If you choose the configuration file way, you have to use the `LoadFromConfigFile()` method (or one of its overrides):

- `LoadFromConfigFile()`: it loads settings from the configuration file named `dce.config` and located in the same folder than the current working executable.
- `LoadFromConfigFile(string fileName)`: it loads settings from the configuration file whose path is `fileName`.
- `LoadFromConfigFile(System.IO.FileStream fileStream)`: it loads settings from the stream pointed by `fileStream`.

An exception is thrown if the configuration file is not found or contains invalid data.

Here is an example of the configuration file way:

```
//Initializes the Dce service
Dce.LoadFromConfigFile();

//Initializes the DceUser
DceUser dceUser = new DceUser();
dceUser.LoadFromConfigFile();
```

If you choose the programmatical way, you have to set manually all the required object properties:

- properties for `Dce` class:
  - `WebProxy` property.
  - `ServiceUrl` property.
- properties for `DceUser` class:
  - `AccessKey` property.
  - `AccessKeyPassword` property.
  - `ServiceAccount` property.
  - `ServiceAccountPassword` property.

Here is an example of the programmatical way:

```
//Initializes the Dce service
Dce.ServiceUrl = "your_service_url";
Dce.WebProxy = new WebProxy("your_proxy_host", your_proxy_port);

//Initializes the DceUser
```

```
DceUser dceUser = new DceUser();
dceUser.AccessKey = "your_access_key";
dceUser.AccessKeyPassword = "your_access_key_password";
dceUser.ServiceAccount = "your_service_account";
dceUser.ServiceAccountPassword = "your_service_account_password";
```

## 6. Logging

The SDK uses the [log4net library](#) for purposes of application debugging and auditing. If you don't want to use this feature, just skip this section as it won't impact the execution of your application.

The log4net tool is part of the [Apache Logging Services](#) project and is made to help the programmer output log statements to a variety of output targets. It is a port of the log4j framework to the .NET runtime.

The log4net configuration is made through a configuration file.

Here is an example of a log4net configuration file:

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>

  <configSections>
    <!-- Specifies the correct section handler to use for the log4net section. -->
    <section name="log4net"
      type="log4net.Config.Log4NetConfigurationSectionHandler, log4net" />
  </configSections>

  <log4net>

    <!-- Defines a file appender. -->
    <appender name="FileAppender" type="log4net.Appender.FileAppender">
      <param name="File" value="your_log_file_name" />
      <param name="AppendToFile" value="true" />
      <layout type="log4net.Layout.PatternLayout">
        <param name="ConversionPattern" value="%d [%t] %-5p %c %m%n" />
      </layout>
    </appender>

    <!-- Defines a console appender. -->
    <appender name="ConsoleAppender" type="log4net.Appender.ConsoleAppender" >
      <layout type="log4net.Layout.PatternLayout">
        <param name="ConversionPattern" value="%-5p %m%n" />
      </layout>
    </appender>

    <root>
      <!-- Defines the logging level for this logger. -->
      <!-- May be DEBUG, INFO, WARNING, ERROR, CRITICAL, ALL. -->
      <level value="DEBUG" />
      <!-- References appenders by name. -->
      <appender-ref ref="FileAppender" />
      <appender-ref ref="ConsoleAppender" />
    </root>

  </log4net>
</configuration>
```

This configuration file defines 2 appenders:

- a `FileAppender` that will write the logging messages in a file whose name is to define.
- a `ConsoleAppender` that will display the logging messages in the `System.Console`.

Here is an example of program where logging capabilities are activated (do not forget to add a reference to the `log4net.dll`):

```
using System;
namespace Namespace
{
    public class Test
    {
        static void Main(string[] args)
        {
            //Configures log4net using the application
            //configuration file described above.
            log4net.Config.XmlConfigurator.Configure();

            try
            {
                //Initializes the Dce service
                Orange.Api.DeviceCapabilities.Dce.LoadFromConfigFile();

                //This Dce method call throw an
                //exception that will be logged.
                Orange.Api.DeviceCapabilities.Dce.GetDevices(null, null, null);
            }
            catch { }
        }
    }
}
```

If you run this sample, you should get the following console output:

```
INFO <GetDevicesByName>
ERROR La valeur ne peut pas être null.
Nom du paramètre : dceUser
System.ArgumentNullException: La valeur ne peut pas être null.
Nom du paramètre : dceUser
à Orange.Api.DeviceCapabilities.Dce.GetDevices(DceUser dceUser, DeviceInfo deviceInfo, Nullable`1
filterProfile)
```

And a file which content is:

```
2008-03-12 16:52:35,021 [10] INFO Orange.Api.DeviceCapabilities.Dce <GetDevicesByName>
2008-03-12 16:52:35,021 [10] ERROR Orange.Api.DeviceCapabilities.Dce La valeur ne peut pas être
null.
Nom du paramètre : dceUser
System.ArgumentNullException: La valeur ne peut pas être null.
Nom du paramètre : dceUser
à Orange.Api.DeviceCapabilities.Dce.GetDevices(DceUser dceUser, DeviceInfo deviceInfo, Nullable`1
filterProfile)
```

For more information, you can refer to the [Apache log4net manual](#).

## 7. First project

A "Hello World"-like web service has been created to both test and check your machine environment and your connectivity to the Device Capabilities API. Please do the following steps:

- Install the Orange API server certificate.
- Create a new .NET console application project in your favorite IDE.
- Reference the `Orange.Api.Common.dll` and the `Orange.Api.DeviceCapabilities.dll` in your project.
- Reference the `log4net.dll` in your project.
- Finally create a main class as follows:

```
using System;
using System.Collections.Generic;
using System.Net;
using System.Net.Security;
using System.Security.Cryptography.X509Certificates;
using Orange.Api.DeviceCapabilities;
using Orange.Api.DeviceCapabilities.BusinessData;

namespace Namespace
{
    public class Test
    {
        public static bool RemoteCertificateValidationCallback(
            Object sender,
            X509Certificate certificate,
            X509Chain chain,
            SslPolicyErrors sslPolicyErrors)
        {
            // If you want to perform extra remote certificate validations,
            // please add implementation here.

            return true;
        }

        static void Main(string[] args)
        {
            ServicePointManager.ServerCertificateValidationCallback =
                RemoteCertificateValidationCallback;

            try
            {
                //Initialize the service URL (optional)
                Dce.InitializeServiceUrl("your_service_url");

                //Initialize the HTTP proxy (optional)
                Dce.InitializeProxy("your_proxy_host", 0); //Use a personalized proxy
                //Dce.UseDefaultProxy(); //Use the default Windows proxy (default)
                //Dce.DisableProxy(); //Don't use proxy

                //Create the organizer
                //You can also use LoadFromConfigFile to set these parameters
                DceUser dceUser = new DceUser();
                dceUser.AccessKey = "your_access_key";
            }
        }
    }
}
```

```
dceUser.AccessKeyPassword = "your_access_key_password";
dceUser.ServiceAccount = "your_service_account";
dceUser.ServiceAccountPassword = "your_service_account_password";

//Create the device info with your brand name and model name
DeviceInfo deviceInfo = new DeviceInfo("SonyEricsson", "K700i");

//Call the 'GetDevices' method with your filter profile
IList<Device> devices = Dce.GetDevices(dceUser, deviceInfo, FilterProfile.Light);

//Print the result
foreach (Device device in devices)
{
    Console.WriteLine(device.ToString());
}
catch (System.Exception exc)
{
    Console.WriteLine("An exception occurred while processing your request: " +
exc.Message);
}
}
```

- Run your project, the response for the code snippet should look like:

```
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subrlabrowser_626'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'rlabrowser'
  User agent = 'SonyEricssonK700i/R1A Browser/SEMC-Browser/4.1 Profile/MIDP-1.0 MIDP-2.0
Configuration/CLDC-1.1'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gi
    ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subspacer2a_172'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'spacer2a'
  User agent = 'SonyEricsson K700i/R2A'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
```

```

'ringtone_spmidi' = 'true'
'video_acodec_amr' = 'true'
'ringtone_voices' = '40'
'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery' = 'true'
'video_vcodec_mpeg4'
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subr2140_824'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'r2140'
  User agent = 'SonyEricssonK700i/R2L SEMC-Browser/4.0 Profile/MIDP-1.0 MIDP-2.0 Configuration/CLDC-1.1'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gif' = 'true'
    'om
    ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_816'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = ''
  User agent = 'SonyEricssonK700i'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gif' = 'true'
    'oma_v_1_0_separate_delivery' = 'true'
    'video_vcodec_mpeg4' = 'true'
    'bmp' = 'tru
    ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subr202_340'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'r202'
  User agent = 'SonyEricssonK700i/R202 Profile/MIDP-1.1 Configuration/CLDC-2.0'

```

```

Capabilities =
  'ringtone_imelody' = 'true'
  'mp3' = 'true'
  'amr' = 'true'
  'ringtone_spmidi' = 'true'
  'video_acodec_amr' = 'true'
  'ringtone_voices' = '40'
  'xhtml_honors_bgcolor' = 'true'
  'video_vcodec_h263_0' = 'true'
  'mms_vcard' = 'true'
  'screensaver_gif' = 'true'
  'oma_v_1_0_separate_delivery'
  ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subr1a_178'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'r1a'
  User agent = 'SonyEricssonK700i/R1A SEMC-Browser/4.0 Profile/MIDP-2.0 Configuration/CLDC-1.1'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gif' = 'true'
    'oma_v_1_0_separ
    ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subspacer2asemc40_852'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'spacer2asemc40'
  User agent = 'SonyEricsson K700i/R2A SEMC-Browser/4.0 UP.Browser/7.0.2.3.119 (GUI) MMP/2.0
  Push/PO'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gif'
    ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_sub00_432'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = '00'
  User agent = 'SonyEricssonK700i/R201'

```

```

Capabilities =
  'ringtone_imelody' = 'true'
  'mp3' = 'true'
  'amr' = 'true'
  'ringtone_spmidi' = 'true'
  'video_acodec_amr' = 'true'
  'ringtone_voices' = '40'
  'xhtml_honors_bgcolor' = 'true'
  'video_vcodec_h263_0' = 'true'
  'mms_vcard' = 'true'
  'screensaver_gif' = 'true'
  'oma_v_1_0_separate_delivery' = 'true'
  'video_vcodec_mpeg4' = 'true'

  ...

[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subr2l_163'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'r2l'
  User agent = 'SonyEricssonK700i/R2L SEMC-Browser/4.0.1 Profile/MIDP-2.0 Configuration/CLDC-1.1'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gif' = 'true'
    'oma_v_1_0_sep
    ...

[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_275'
  Brand name = 'SonyEricsson'
  Model name = 'K700I'
  Type = 'MOBILE PHONE'
  Firmware = ''
  User agent = 'SonyEricssonK700i/R2A SEMC-Browser/4.0 Profile/MIDP-1.0 MIDP-2.0 Configuration/CLDC-1.1'
  Capabilities =
    'card_title_support' = 'true'
    'access_key_support' = 'true'
    'effective_width' = '176'
    'wtai_support' = 'true'
    'color_enabled' = 'true'
    'mono_object' = 'false'
    'mms_compatible' = 'true'
    'browser_name' = 'SonyEricsson'
    'wml_version' = '2.0'
    'num_char_per_line_wap' = '22'
  ,
  ...

```

Congratulations!

# Chapter 5. Methods

You should first make sure you've read the prerequisites before coding and running the following programlisting. The prerequisites explain, among others, how to set up your proxy information and your account information through a configuration file.

## 1. Basic scenarios

In this chapter you will learn how to use the base objects we defined for you inside our SDK through some ready-to-use samples.

What are the basic steps to get devices information and capabilities by name?

1. Create a `DceUser` and initialize its parameters.
2. Create a `DeviceInfo`, set the brand name and/or the model name.
3. In the end, call the API method.

## 2. Method `GetDevices` by name

### 2.1. Description

This service returns the information and capabilities of the devices matching the given brand name and/or model name.

### 2.2. Input parameter

**Table 5.1. `GetDevices` by name: Input parameters.**

Name	Type	Description	Cardinality
dceUser	DceUser	A user of the DCE service	1..1
deviceInfo	DeviceInfo	The device's model name and brand name	1..1
filterProfile	FilterProfile	The filter profile for this search	0..1

### 2.3. Output parameter

**Table 5.2. `GetDevices` by name: Output parameters.**

Name	Type	Description	Cardinality
devices	<code>IList&lt;Device&gt;</code>	The devices found inside the database	1..n

### 2.4. Exceptions

This web method may throw `TechnicalException` or `FunctionalException`.

### 2.5. Sample code

This sample code uses the `dce.config` file, don't forget to fill in your information.

```

using System;
using System.Collections.Generic;
using System.Net;
using System.Net.Security;
using System.Security.Cryptography.X509Certificates;
using Orange.Api.DeviceCapabilities;
using Orange.Api.DeviceCapabilities.BusinessData;

namespace Namespace
{
    public class Test
    {
        public static bool RemoteCertificateValidationCallback(
            Object sender,
            X509Certificate certificate,
            X509Chain chain,
            SslPolicyErrors sslPolicyErrors)
        {
            // If you want to perform extra remote certificate validations,
            // please add implementation here.

            return true;
        }

        static void Main(string[] args)
        {
            ServicePointManager.ServerCertificateValidationCallback =
                RemoteCertificateValidationCallback;

            try
            {
                //Initialize the service URL & the HTTP proxy (optional)
                Dce.LoadFromConfigFile();

                //Create the DCE user and load credentials from config file
                DceUser dceUser = new DceUser();
                dceUser.LoadFromConfigFile();

                //Create the device info with your brand name and model name
                DeviceInfo deviceInfo = new DeviceInfo("SonyEricsson", "K700i");

                //Call the 'GetDevices' method with your filter profile
                IList<Device> devices = Dce.GetDevices(dceUser, deviceInfo, FilterProfile.Light);

                //Print the result
                foreach (Device device in devices)
                {
                    Console.WriteLine(device.ToString());
                }
            }
            catch (System.Exception exc)
            {
                Console.WriteLine("An exception occurred while processing your request: " +
                    exc.Message);
            }
        }
    }
}

```

The result looks like this:

```
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subrlabrowser_626'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'rlabrowser'
  User agent = 'SonyEricssonK700i/R1A Browser/SEMC-Browser/4.1 Profile/MIDP-1.0 MIDP-2.0
Configuration/CLDC-1.1'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gi
    ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subspacer2a_172'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'spacer2a'
  User agent = 'SonyEricsson K700i/R2A'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
    'xhtml_honors_bgcolor' = 'true'
    'video_vcodec_h263_0' = 'true'
    'mms_vcard' = 'true'
    'screensaver_gif' = 'true'
    'oma_v_1_0_separate_delivery' = 'true'
    'video_vcodec_mpeg4'
    ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_ver1_subr2140_824'
  Brand name = 'SonyEricsson'
  Model name = 'K700i'
  Type = 'MOBILE PHONE'
  Firmware = 'r2140'
  User agent = 'SonyEricssonK700i/R2L SEMC-Browser/4.0 Profile/MIDP-1.0 MIDP-2.0 Configuration/
CLDC-1.1'
  Capabilities =
    'ringtone_imelody' = 'true'
    'mp3' = 'true'
    'amr' = 'true'
    'ringtone_spmidi' = 'true'
    'video_acodec_amr' = 'true'
    'ringtone_voices' = '40'
```

```

'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'om
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'sonyericsson_k700i_ver1_816'
Brand name = 'SonyEricsson'
Model name = 'K700i'
Type = 'MOBILE PHONE'
Firmware = ''
User agent = 'SonyEricssonK700i'
Capabilities =
'ringtone_imelody' = 'true'
'mp3' = 'true'
'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_acodec_amr' = 'true'
'ringtone_voices' = '40'
'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery' = 'true'
'video_vcodec_mpeg4' = 'true'
'bmp' = 'tru
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'sonyericsson_k700i_ver1_subr202_340'
Brand name = 'SonyEricsson'
Model name = 'K700i'
Type = 'MOBILE PHONE'
Firmware = 'r202'
User agent = 'SonyEricssonK700i/R202 Profile/MIDP-1.1 Configuration/CLDC-2.0'
Capabilities =
'ringtone_imelody' = 'true'
'mp3' = 'true'
'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_acodec_amr' = 'true'
'ringtone_voices' = '40'
'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery'
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'sonyericsson_k700i_ver1_subrla_178'
Brand name = 'SonyEricsson'
Model name = 'K700i'
Type = 'MOBILE PHONE'
Firmware = 'rla'
User agent = 'SonyEricssonK700i/R1A SEMC-Browser/4.0 Profile/MIDP-2.0 Configuration/CLDC-1.1'
Capabilities =
'ringtone_imelody' = 'true'
'mp3' = 'true'
'amr' = 'true'
'ringtone_spmidi' = 'true'

```

```

'video_acodec_amr' = 'true'
'ringtone_voices' = '40'
'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separ
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'sonyericsson_k700i_ver1_subspacer2asemc40_852'
Brand name = 'SonyEricsson'
Model name = 'K700i'
Type = 'MOBILE PHONE'
Firmware = 'spacer2asemc40'
User agent = 'SonyEricsson K700i/R2A SEMC-Browser/4.0 UP.Browser/7.0.2.3.119 (GUI) MMP/2.0
Push/PO'
Capabilities =
'ringtone_imelody' = 'true'
'mp3' = 'true'
'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_acodec_amr' = 'true'
'ringtone_voices' = '40'
'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif'
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'sonyericsson_k700i_ver1_sub00_432'
Brand name = 'SonyEricsson'
Model name = 'K700i'
Type = 'MOBILE PHONE'
Firmware = '00'
User agent = 'SonyEricssonK700i/R201'
Capabilities =
'ringtone_imelody' = 'true'
'mp3' = 'true'
'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_acodec_amr' = 'true'
'ringtone_voices' = '40'
'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery' = 'true'
'video_vcodec_mpeg4' = 'true'
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'sonyericsson_k700i_ver1_subr2l_163'
Brand name = 'SonyEricsson'
Model name = 'K700i'
Type = 'MOBILE PHONE'
Firmware = 'r2l'
User agent = 'SonyEricssonK700i/R2L SEMC-Browser/4.0.1 Profile/MIDP-2.0 Configuration/CLDC-1.1'
Capabilities =
'ringtone_imelody' = 'true'
'mp3' = 'true'

```

```

'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_acodec_amr' = 'true'
'ringtone_voices' = '40'
'xhtml_honors_bgcolor' = 'true'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_sep
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
  Name = 'sonyericsson_k700i_275'
  Brand name = 'SonyEricsson'
  Model name = 'K700I'
  Type = 'MOBILE PHONE'
  Firmware = ''
  User agent = 'SonyEricssonK700i/R2A SEMC-Browser/4.0 Profile/MIDP-1.0 MIDP-2.0 Configuration/CLDC-1.1'
  Capabilities =
    'card_title_support' = 'true'
    'access_key_support' = 'true'
    'effective_width' = '176'
    'wtai_support' = 'true'
    'color_enabled' = 'true'
    'mono_object' = 'false'
    'mms_compatible' = 'true'
    'browser_name' = 'SonyEricsson'
    'wml_version' = '2.0'
    'num_char_per_line_wap' = '22'
    ,
    ...

```

## 3. Method GetDevices by user agent

### 3.1. Description

This service returns the device capabilities for a device, the search criteria being the User-Agent that the device provides through its HTTP requests.

### 3.2. Input parameter

**Table 5.3. GetDevices by user agent: Input parameters.**

Name	Type	Description	Cardinality
dceUser	DceUser	A user of the DCE service.	1..1
userAgent	UserAgent	An user agent.	1..1
filterProfile	FilterProfile	The filter profile for this search.	0..1

### 3.3. Output parameter

**Table 5.4. GetDevices by user agent: Output parameters.**

Name	Type	Description	Cardinality
devices	IList<Device>	The devices found inside the database	1..n

### 3.4. Exceptions

This web method may throw `TechnicalException` or `FunctionalException`.

### 3.5. Sample code

This sample code uses the `dce.config` file, don't forget to fill in your information.

```
using System;
using System.Collections.Generic;
using System.Net;
using System.Net.Security;
using System.Security.Cryptography.X509Certificates;
using Orange.Api.DeviceCapabilities;
using Orange.Api.DeviceCapabilities.BusinessData;

namespace Namespace
{
    public class Test
    {
        public static bool RemoteCertificateValidationCallback(
            Object sender,
            X509Certificate certificate,
            X509Chain chain,
            SslPolicyErrors sslPolicyErrors)
        {
            // If you want to perform extra remote certificate validations,
            // please add implementation here.

            return true;
        }

        static void Main(string[] args)
        {
            ServicePointManager.ServerCertificateValidationCallback =
                RemoteCertificateValidationCallback;

            try
            {
                //Initialize the service URL & the HTTP proxy (optional)
                Dce.LoadFromConfigFile();

                //Create the DCE user and load credentials from config file
                DceUser dceUser = new DceUser();
                dceUser.LoadFromConfigFile();
            }
        }
    }
}
```

```

//Create the user agent
UserAgent userAgent = new UserAgent("SEC-SGHE300");

//Call the 'GetDevices' method with your filter profile
IList<Device> devices = Dce.GetDevices(dceUser, userAgent, FilterProfile.Light);

//Print the result
foreach (Device device in devices)
{
    Console.WriteLine(device.ToString());
}
}
catch (System.Exception exc)
{
    Console.WriteLine("An exception occurred while processing your request: " +
exc.Message);
}
}
}

```

The result looks like this:

```

[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'samsung_sgh-e300_ver1_826'
Brand name = 'Samsung'
Model name = 'SGH-E300'
Type = 'MOBILE PHONE'
Firmware = ''
User agent = 'SEC-SGHE300'
Capabilities =
  'ringtone_imelody' = 'true'
  'mmf' = 'true'
  'j2me_midp_1_0' = 'true'
  'ringtone_voices' = '40'
  'wallpaper_preferred_width' = '128'
  'j2me_screen_width' = '128'
  'mms_jpeg_baseline' = 'true'
  'receiver' = 'true'
  'wta_phonebook' = 'true'
  'wap_push_support' = 'true'
  'wallpaper_gif' = 'true'
  'wml_1_3' = 'true'
  'ringtone_midi_monophonic' = 'true'
  'mms_mi
  ...

```

## 4. Method GetDevices by TAC code

### 4.1. Description

This service returns the device capabilities for a device, the search criteria being the device TAC Code.

## 4.2. Input parameter

**Table 5.5. GetDevices by TAC code: Input parameters.**

Name	Type	Description	Cardinality
dceUser	DceUser	A user of the DCE service	1..1
tacCode	TacCode	A tac code.	1..1
filterProfile	FilterProfile	The filter profile for this search	0..1

## 4.3. Output parameter

**Table 5.6. GetDevices by TAC code: Output parameters.**

Name	Type	Description	Cardinality
devices	IList<Device>	The devices found inside the database	1..n

## 4.4. Exceptions

This web method may throw `TechnicalException` or `FunctionalException`.

## 4.5. Sample code

This sample code uses the `dce.config` file, don't forget to fill in your information.

```
using System;
using System.Collections.Generic;
using System.Net;
using System.Net.Security;
using System.Security.Cryptography.X509Certificates;
using Orange.Api.DeviceCapabilities;
using Orange.Api.DeviceCapabilities.BusinessData;

namespace Namespace
{
    public class Test
    {
        public static bool RemoteCertificateValidationCallback(
            Object sender,
            X509Certificate certificate,
            X509Chain chain,
            SslPolicyErrors sslPolicyErrors)
        {
            // If you want to perform extra remote certificate validations,
            // please add implementation here.

            return true;
        }

        static void Main(string[] args)
        {
            ServicePointManager.ServerCertificateValidationCallback =
                RemoteCertificateValidationCallback;
        }
    }
}
```

```

try
{
    //Initialize the service URL & the HTTP proxy (optional)
    Dce.LoadFromConfigFile();

    //Create the DCE user and load credentials from config file
    DceUser dceUser = new DceUser();
    dceUser.LoadFromConfigFile();

    //Create the TAC code
    TacCode tacCode = new TacCode("35797300");

    //Call the 'GetDevices' method with your filter profile
    IList<Device> devices = Dce.GetDevices(dceUser, tacCode, FilterProfile.Light);

    //Print the result
    foreach (Device device in devices)
    {
        Console.WriteLine(device.ToString());
    }
}
catch (System.Exception exc)
{
    Console.WriteLine("An exception occurred while processing your request: " +
exc.Message);
}
}
}

```

The result looks like this:

```

[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'nokia_6111_ver1_sub0345_270'
Brand name = 'Nokia'
Model name = '6111'
Type = 'MOBILE PHONE'
Firmware = '0345'
User agent = 'Nokia6111/2.0 (03.45) Profile/MIDP-2.0 Configuration/CLDC-1.1'
Capabilities =
'picture_max_width' = '126'
'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_wmv' = 'false'
'video_acodec_amr' = 'true'
'ringtone_voices' = '64'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery' = 'true'
'video_vcodec_mpeg4' = 'true'
'bmp' = 'false'
'image_as_link_support' = 'true'
'xhtml_make
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'nokia_6111_ver1_sub0358_168'
Brand name = 'Nokia'

```

```

Model name = '6111'
Type = 'MOBILE PHONE'
Firmware = '0358'
User agent = 'Nokia6111/2.0 (03.58) Profile/MIDP-2.0 Configuration/CLDC-1.1'
Capabilities =
  'picture_max_width' = '126'
  'amr' = 'true'
  'ringtone_spmidi' = 'true'
  'video_wmv' = 'false'
  'video_acodec_amr' = 'true'
  'ringtone_voices' = '64'
  'video_vcodec_h263_0' = 'true'
  'mms_vcard' = 'true'
  'screensaver_gif' = 'true'
  'oma_v_1_0_separate_delivery' = 'true'
  'video_vcodec_mpeg4' = 'true'
  'bmp' = 'false'
  'image_as_link_support' = 'true'
  'xhtml_make
  ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'nokia_6111_ver1_341'
Brand name = 'Nokia'
Model name = '6111'
Type = 'MOBILE PHONE'
Firmware = ''
User agent = 'Nokia6111'
Capabilities =
  'picture_max_width' = '126'
  'amr' = 'true'
  'ringtone_spmidi' = 'true'
  'video_wmv' = 'false'
  'video_acodec_amr' = 'true'
  'ringtone_voices' = '64'
  'video_vcodec_h263_0' = 'true'
  'mms_vcard' = 'true'
  'screensaver_gif' = 'true'
  'oma_v_1_0_separate_delivery' = 'true'
  'video_vcodec_mpeg4' = 'true'
  'bmp' = 'false'
  'image_as_link_support' = 'true'
  'xhtml_make_phone_call_string' = 'wtai://wp/mc;'
  'screensaver_png' = 'tr
  ...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'nokia_6111_ver1_sub0341_38'
Brand name = 'Nokia'
Model name = '6111'
Type = 'MOBILE PHONE'
Firmware = '0341'
User agent = 'Nokia6111/2.0 (03.41) Profile/MIDP-2.0 Configuration/CLDC-1.1'
Capabilities =
  'picture_max_width' = '126'
  'amr' = 'true'
  'ringtone_spmidi' = 'true'
  'video_wmv' = 'false'
  'video_acodec_amr' = 'true'
  'ringtone_voices' = '64'
  'video_vcodec_h263_0' = 'true'
  'mms_vcard' = 'true'

```

```

'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery' = 'true'
'video_vcodec_mpeg4' = 'true'
'bmp' = 'false'
'image_as_link_support' = 'true'
'xhtml_make_
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'nokia_6111_sub0370_874'
Brand name = 'Nokia'
Model name = '6111'
Type = 'MOBILE PHONE'
Firmware = '0370'
User agent = 'Nokia6111/2.0 (03.70) Profile/MIDP-2.0 Configuration/CLDC-1.1'
Capabilities =
'picture_max_width' = '126'
'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_wmv' = 'false'
'video_acodec_amr' = 'true'
'ringtone_voices' = '64'
'video_vcodec_h263_0' = 'true'
'mms_vcard' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery' = 'true'
'video_vcodec_mpeg4' = 'true'
'bmp' = 'false'
'image_as_link_support' = 'true'
'xhtml_make_phon
...
[Orange.Api.DeviceCapabilities.BusinessData.Device]
Name = 'nokia_6111_ver1_sub0377_603'
Brand name = 'Nokia'
Model name = '6111'
Type = 'MOBILE PHONE'
Firmware = '0377'
User agent = 'Nokia6111/2.0 (03.77) Profile/MIDP-2.0 Configuration/CLDC-1.1'
Capabilities =
'picture_max_width' = '126'
'amr' = 'true'
'ringtone_spmidi' = 'true'
'video_acodec_amr' = 'true'
'video_wmv' = 'false'
'ringtone_voices' = '64'
'wbmp' = 'true'
'mms_vcard' = 'true'
'video_vcodec_h263_0' = 'true'
'screensaver_gif' = 'true'
'oma_v_1_0_separate_delivery' = 'true'
'video_vcodec_mpeg4' = 'true'
'bmp' = 'true'
'image_as_link_support' = 'tr
...

```

# Appendix A. Error codes

## 1. DCE Functional error

Table A.1. functional errors

Code	Detail
1	Error name: NoDeviceFound Description: No device matches your search criteria.
-1	Error name: DatabaseException Description: No device matches your search criteria.
-99	Error name: UnknownException Description: Unknown Error (Throwable caught).

## 2. Technical error

### 2.1. Metadata

Table A.2. Metadata errors

Code	Detail
MET0001	Context Metadata {0} does not exist
MET0002	Context Metadata {0} already exists
MET0008	Metadata value {0} does not exist
MET0009	Metadata value {0} already exists
MET0011	Context Metadata Key {0} does not exist
MET0012	Context Metadata Key {0} already exist

### 2.2. Policy

Table A.3. Policy errors

Code	Detail
MED0001	Missing mandatory parameter: {0}
MED0002	The required service is not activated
MED0003	The service account {0} is deactivated
MED0004	No subscription matches the API Service Account {0}
MED0005	The subscription is out of a valid period
MED0006	The quota is exceeded
MED0007	A mandatory metadata is missing: {0}

Code	Detail
MED0008	All accesses are blocked for technical reasons
MED0009	Too much subscriptions match the API Service Account {0}
MED0010	The Business Service {0} is not linked to the Service Provider {1}
MED0011	Quota Exceeded
MED0012	There is no SLM primary Server available !
MED0013	The mandatory inbound metadata {0} is not present
MED0014	The inbound metadata {0} is mandatory and the value {1} is not found

## 2.3. Gateway

**Table A.4. Gateway errors**

Code	Detail
DPW0001	Unknown error
DPW0002	Error occurred during SOAP validation
DPW0003	Error in metadata declaration
DPW0004	Metadata key is not valid
DPW0005	Metadata value is not valid
DPW0006	Mediation engine connection error
DPW0007	Unknown access key
DPW0008	Failed to establish a backside connection
DPW0009	Correlation identifier is missing
DPW0010	Correlation timestamp is missing
DPW0011	Metadata number between upper and lower limit
DPW0012	Duplicated metadata key
DPW0013	Back-end response cannot be parsed

## 2.4. Connectivity

**Table A.5. Connectivity errors**

Code	Detail
REQ.BACKSIDE_CONNECTION_FAILURE	Failed to establish a backside connection with the back-end service  (500) Network connection error between technical platform and WSP server.
GENERAL	Internal Error  (500) SOAP message specify an unknown operation name like "operation_C" or SOAP message has a missing '>' for the closing tag soapenv:Envelope.

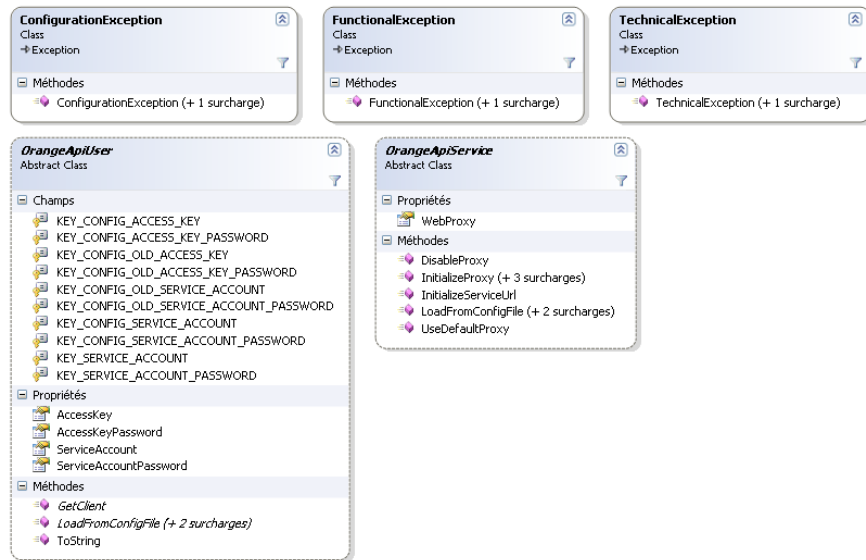
Device Capabilities API for .NET - Error codes

Code	Detail
REQ.SERVICE_NOT_FOUND	<p>The back-end service could not handle the request because it has not found any service corresponding to the received request</p> <p>(500) Service is not available.</p>
IOSW.UNKNOWN_ERROR	<p>An unknown error has occurred during the processing of the request/response</p> <p>(500) « Internal error » of the technical platform.</p>
REQ.AUTHENTICATION_FAILURE	<p>The credentials provided are not valid</p> <p>(401) Unauthorized.</p>
REQ.AUTORISATION_FAILURE	<p>The client is not authorized to consume the requested service</p> <p>(500).</p>
REQ.SERVICE_AUTHENTICATION_FAILURE	<p>The credentials provided by the service broker when connecting to the back-end service are not valid</p> <p>(500).</p>
REQ.SERVICE_AUTORISATION_FAILURE	<p>The service broker is not authorized to consume the requested back-end service</p> <p>(500).</p>
REQ.SCHEMA_VALIDATION_ERROR	<p>The request sent by the client does not conform to the xml schema of the service</p> <p>(500) Schema Validation Error.</p>
IOSW.XML_THREAT_ERROR	<p>An xml threat was detected by the technical validation platform</p> <p>XML Threat protection, attacks, XDoS.</p>
MESSAGE_TOO_LARGE	<p>The size of the request or response message is too large</p> <p>XML Threat protection - Message too large.</p>
REQ.SERVICE_INTERNAL_ERROR	<p>The service failed to respond to the request because of an internal error</p> <p>Server Internal error.</p>

# Appendix B. Class diagrams

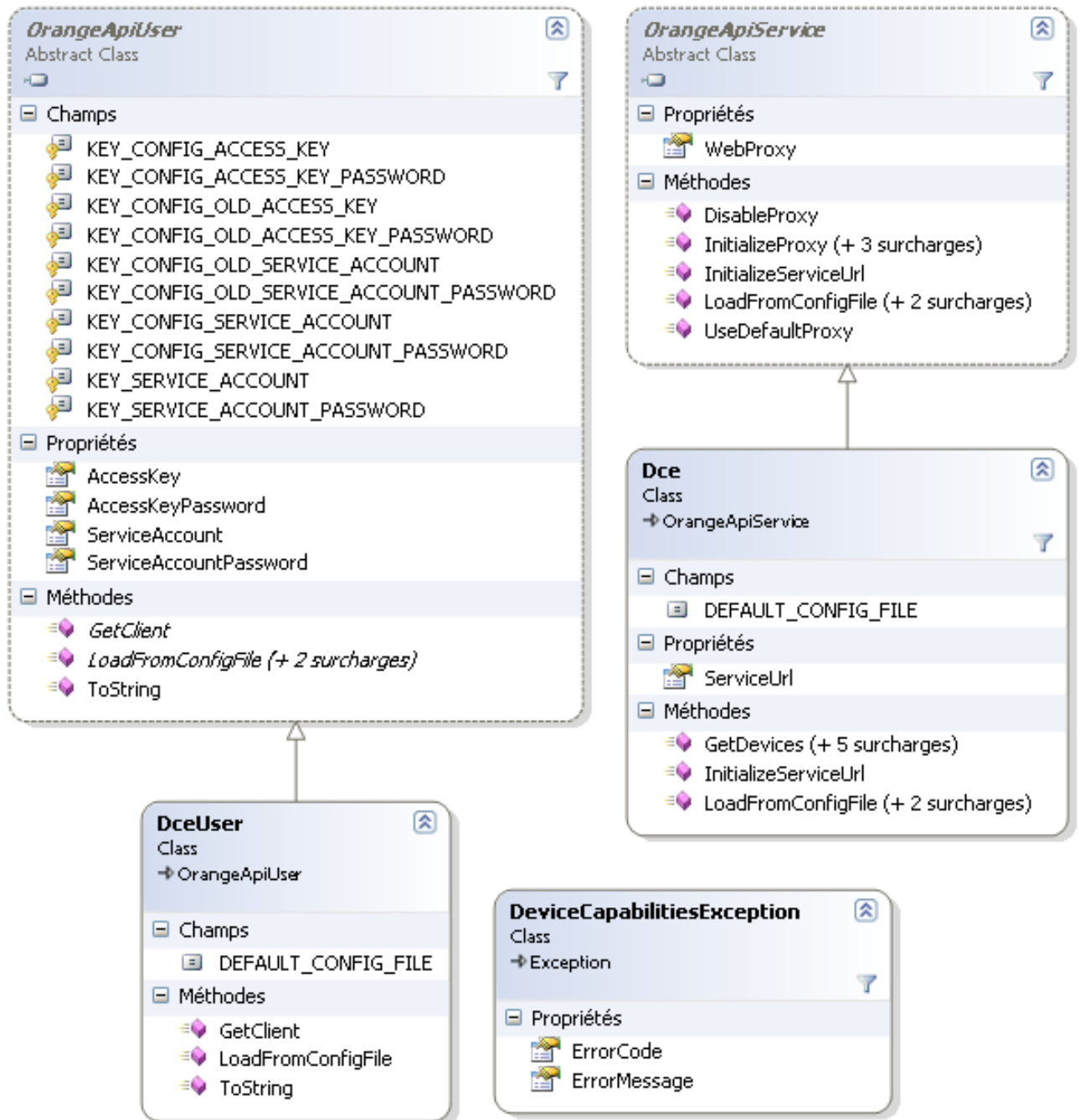
## 1. Orange.Api.Common namespace

Figure B.1. Orange.Api.Common Model



## 2. Orange.Api.DeviceCapabilities namespace

Figure B.2. Orange.Api.DeviceCapabilities Model



### 3. Orange.Api.DeviceCapabilities.BusinessData namespace

Figure B.3. Orange.Api.DeviceCapabilities.BusinessData Model

