Blue's Enterprise 4

Web Service API Guide

rel. 1.1 07-07-2010

Summary

Introduction

Monitor, share, inform.

Thanks to your new Blue's Enterprise 4 (BE4) you will be able to increase your savings and improve your Business efficiency, thanks to brand new methods for controlling, sharing with your colleagues and keep your clients informed.

Thanks to these new features of integration via BE4 web services, you can access telephone traffic data of your Company via different applications, such as your Intranet, your Web portal, ERP or CRM or even from MS-Office documents.

This document contains a description regarding how BE4 accesses data in a simple and secure way.

BE4 web services

BE4 Web services are methods that allow the interrogation and display of BE4 telephone traffic data using different applications, being able to filter such data according to the conditions the final user's habit regarding BE4, using period filters (today, yesterday, this month and so on) and any information handled by BE4.

Web Service data format

Data are returned in standard XML format, similar to HTML, implementing communication among different applications and platforms (Windows, Linux, Unix, Mac).

How to use Web Service di BE4

Web Services are available on http://BE4server/BluesEnterprise/WsPublicServices.asmx, where BE4server represents the name of the server running BE4.
They can be requested by any client able to interrogate web servers using http protocol.
BE4 Web Services can be used via POST and GET methods of the http protocol.

Use of the Web Services with HTTPS protocol

If BE4 site is configured with an SSL certificate, Web Services can interrogated in a secure way thanks to the HTTPS protocol.

Development tools

BE4 Web Services can be used in any development environment capable of interpreting WSDL language, such as MS-Visual Studio 2005/2008 dot NET,Apache AXIS, J2EE , JBI, IBM WebSphere, BEA WebLogic and many others.

Necessary authorisations for using Web Services

In order to use BE4 Web Services, a username and password of a BE4 administrator should be used.

BE4 Web Services specifications

Available methods

Calls filtered according to a period

public DataTable WsGetCallList(string UserName, string Password, enPeriodType TimePeriodCondition, bool GetAllFields)

Calls filtered according to a period and a condition on call table field

public DataTable WsGetCallListByCondition(string UserName, string Password, enPeriodType TimePeriodCondition, bool GetAllFields, enFields ConditionField, enFieldOperator ConditionOperator, string ConditionValue)

Calls filtered according to a period and to one or more conditions on the call table fields

public DataTable WsGetCallListByConditions(string UserName, string Password, enPeriodType TimePeriodCondition, bool GetAllFields, Condition[] Conditions)

Cost totals and averages of the durations according to a group field and a period.

public DataTable WsGetGroupQuery(string UserName, string Password, enPeriodType TimePeriodCondition, enFieldsForGroup GroupField)

Cost totals and averages of the durations according to a group field, a period and a condition on call table field

public DataTable WsGetGroupQueryByConditions(string UserName, string Password, enPeriodType TimePeriodCondition, enFieldsForGroup GroupField, Condition[] Conditions)

Cost totals and averages of the durations according to a group field, a period and to one or more conditions on the call table fields

public DataTable WsGetCallList(string UserName, string Password, enPeriodType TimePeriodCondition, bool GetAllFields)

Input parameters

All methods can accept the following input parameters:

UserName field

Account used to access BE4 services, it has to be an administrator.

SOAP/WSDL definition
<UserName>**string**</UserName>

Password field

Password used to access BE4

SOAP/WSDL definition
<Password>**string**</Password>

GetAllFields field

Tells if the method has to return a subset of fields from BE4 Calls table or all fields.

SOAP/WSDL definition
<GetAllFields>**boolean**</GetAllFields>

Period condition (TimePeriodCondition)

Represents the period subject of the analysis

VALUE	DESCRIPTION
TODAY	Today
YESTERDAY	Yesterday
THIS_WEEK	This week
LAST_WEEK	Last week
THIS_MONTH	This month
LAST_MONTH	Last month
THIS_YEAR	This year
LAST_YEAR	Last year
LAST_2DAYS	Last 2 days
LAST_7DAYS	Last 2 days
LAST_30DAYS	Last 2 days
LAST_60DAYS	Last 60 days
LAST_12MONTHS	Last 12 months
LAST_2YEARS	Last 2 years

SOAP/WSDL definition
 <TimePeriodCondition>TODAY or YESTERDAY or THIS_WEEK or LAST_WEEK or THIS_MONTH or LAST_MONTH or THIS_YEAR or LAST_YEAR or LAST_2DAYS or LAST_7DAYS or LAST_30DAYS or LAST_60DAYS or LAST_12MONTHS or LAST_2YEARS</TimePeriodCondition>

Dato da analizzare (Field)

Rappresenta un campo sul quale si vuole applicare una condizione.

VALORE	DESCRIZIONE	TIPO	FORMATO
COST	Call cost	decimal	
COST_2	Comparison cost	decimal	
TARIFF	Tariff	decimal	
DATE	Call date	dateTime	
DURATION	Call duration	dateTime	
TIME	Call time	dateTime	
ANSWER	Answered call	dateTime	
TRANSF	Transferred call	short	0=not transferred 1= transferred
PKID	Table record key	int	
PULSES	Units	int	
PERC_DIFF	Call cost difference (%)	float	
AREA	Call area	string	
FIELD1	Custom 1 field	string	
FIELD2	Custom 2 field	string	
FIELD3	Custom 3 field	string	
FIELD4	Custom 4 field	string	
CARRIER1	Telephone Carrier	string	
CARRIER2	Telephone Carrier Comparison Tariff	string	
COST_CENTRE	Cost Centre	string	
ACCOUNT	PIN Code	string	
EXT	Extension	string	
TIME_BAND	Call time band	string	
DAY	Day name	string	
LINE	Line	string	
COUNTRY	Nation	string	
NAME	Caller name	string	
EXT_NAME	Extension name	string	
NUMBER	Caller number	string	
DEP	Department	string	
SITE	PABX site code	string	
CALL_TYPE	Call type	string	I=entrante O=uscente
DEST_TYPE	Destination type	string	
CURR	Currency	string	
CURR_EXC	Currency exchange rate	double	
UTC_DT	UTC date time	dateTime	
DEP_2	Second extension department	string	
COST_CENTER_2	Second extension cost centre	string	
REF_CURR	Reference currency	string	
DATE_2	Second extension date (for multi-Country)	dateTime	
TIME_2	Second extension time (for multi-Country)	dateTime	
HQ	Site	string	
HQ_2	Second extension site	string	

GROUP_NAME	Group name	string
REF_COST	Comparison cost (costo1 x for currency exchange rate)	double
TRAFFIC_TYPE	Traffic type	string
PABX_NAME	PABX name	string
PABX_DT	PABX time	dateTime
CALLID	CDR Id	int
TRANSF_TO	Transferred to	string
TRANSF_FROM	Transferred from	string
EXT_TYPE	Extension type	string
EXT_GROUP1	Extension first group	string
EXT_GROUP2	Extension second group	string
EXT_GROUP3	Extension third group	string
PROFILE	BE4 user name which the filter should be taken from	string

SOAP/WSDL definition

<ConditionField>COST or COST_2 or COST_DIFF or TARIFF or DATE or DURATION or TIME or ANSWER or TRANSF or PKID or PULSES or PERC_DIFF or AREA or FIELD1 or FIELD2 or FIELD3 or FIELD4 or CARRIER1 or CARRIER2 or COST_CENTRE or ACCOUNT or EXT or TIME_BAND or DAY or LINE or COUNTRY or NAME or EXT_NAME or NUMBER or LINE_NUMBER or DEP or SITE or CALL_TYPE or DEST_TYPE or CURR or CURR_EXC or UTC_DT or DEP_2 or COST_CENTER_2 or REF_CURR or DATE_2 or TIME_2 or HQ or HQ_2 or GROUP_NAME or REF_COST or TRAFFIC_TYPE or PABX_NAME or PABX_DT or CALLID or TRANSF_TO or TRANSF_FROM or EXT_TYPE or EXT_GROUP1 or EXT_GROUP2 or EXT_GROUP3 or PROFILE</ConditionField>

Carrier field (ConditionOperator)

represents the operation on the field

VALUE	DESCRIPTION
EQUAL	Equal to
NOT_EQUAL	Different from
IN	Between a value range
CONTAINS	Contains a string
NOT_CONTAINS	Does not contain a string
GREATER	Greater than
LESS	Less than
LESS_OR_EQUAL	Less or equal to
GRATER_OR_EQUAL	Greater or equal to
STARTS	Starts with
ENDS	Ends with
NOT_STARTS	Does not start with
NOT_ENDS	Does not end with
EMPTY	Empty
NOT_EMPTY	Not empty

SOAP/WSDL definition

< ConditionOperator>EQUAL or NOT_EQUAL or IN or CONTAINS or NOT_CONTAINS or GREATER or LESS or LESS_OR_EQUAL or GRATER_OR_EQUAL or STARTS or ENDS or NOT_STARTS or NOT_ENDS or EMPTY or NOT_EMPTY</ ConditionOperator>

Value field (ConditionValue)

represents the value of the field the condition is applied to

SOAP/WSDL defition
<ConditionValue>**string**</ConditionValue>

Group field (GroupField)

Represents the field you wish to group.
see description of the field values for the value description.

SOAP/WSDL definition
    <GroupField>TARIFF or ANSWER or TRANSF or AREA or CARRIER1 or CARRIER2 or COST_CENTRE or ACCOUNT or EXT
or DAY or LINE or COUNTRY or NAME or EXT_NAME or NUMBER or LINE_NUMBER or DEP or SITE or CALL_TYPE or
DEST_TYPE or CURR or DEP_2 or COST_CENTER_2 or REF_CURR or HQ or HQ_2 or GROUP_NAME or TRAFFIC_TYPE or
PABX_NAME or PABX_DT or CALLID or TRANSF_TO or TRANSF_FROM or EXT_TYPE or EXT_GROUP1 or EXT_GROUP2 or
EXT_GROUP3</GroupField>

Output values

Output of the WsGetCallList, WsGetCallListByCondition, WsGetCallListByConditions methods

Basic call list

FIELD	DESCRIPTION	TYPE	FORMAT
COST	Call cost	decimal	
TARIFF	Tariff	decimal	
DATE	Call date	dateTime	
DURATION	Call duration	dateTime	
TIME	Call time	dateTime	
ANSWER	Answered call	dateTime	
TRANSF	Transferred call	short	0=not transferred 1=transferred
AREA	Caller area	string	
COST_CENTRE	Cost centre	string	
EXT	Extension	string	
LINE	Line	string	
COUNTRY	Country	string	
NAME	Caller name	string	
EXT_NAME	Extension name	string	
NUMBER	Caller number	string	
DEP	Department	string	
CALL_TYPE	Call type	string	I=incoming O=outgoing
DEST_TYPE	Destination type	string	
CURR	Currency	string	
REF_CURR	Reference currency	string	
REF_COST	Reference cist (costo1 for currency exchange rate)	double	
TRAFFIC_TYPE	Traffic type	string	
PABX_NAME	Pabx name	string	
PABX_DT	PABX time	dateTime	
TRANSF_TO	Transferred to	string	
TRANSF_FROM	Transferred from	string	
EXT_TYPE	Extension type	string	
EXT_GROUP1	Extension first group	string	
EXT_GROUP2	Extension second group	string	
EXT_GROUP3	Extension third group	string	

Full call list

FIELD	DESCRIPTION	TYPE	FORMAT
COST	Call cost	decimal	
COST_2	Reference cost	decimal	
TARIFF	Tariff	decimal	
DATE	Call date	dateTime	
DURATION	Call duration	dateTime	
TIME	Call time	dateTime	
ANSWER	Answered call	dateTime	
TRANSF	Transferred call	short	0=not transferred 1=transferred
PKID	Record key on table	int	
PULSES	Units	int	
PERC_DIFF	% difference between call costs	float	
AREA	Caller area	string	
FIELD1	custom 1 field	string	
FIELD2	custom 2 field	string	
FIELD3	custom 3 field	string	
FIELD4	custom 4 field	string	
CARRIER1	Telephone carrier	string	
CARRIER2	Telephone carrier comparison tariff	string	
COST_CENTRE	Cost Centre	string	
ACCOUNT	PIN code	string	
EXT	Extension	string	
TIME_BAND	Call time band	string	
DAY	Day name	string	
LINE	Line	string	
COUNTRY	Country	string	
NAME	Caller name	string	
EXT_NAME	Extension name	string	
NUMBER	Caller name	string	
DEP	Department	string	
SITE	PABX code	string	
CALL_TYPE	Call type	string	I=incoming O=outgoing
DEST_TYPE	Destination type	string	
CURR	Currency	string	
CURR_EXC	Exchange rate	double	
UTC_DT	UTC date time	dateTime	
DEP_2	Second extension department	string	
COST_CENTER_2	Second extension cost centre	string	
REF_CURR	Comparison currency	string	
DATE_2	Second extension date (for multi-Country)	dateTime	
TIME_2	Second extension time (for multi-Country)	dateTime	
HQ	Site	string	
HQ_2	Second extension site	string	

GROUP_NAME	Group name	string
REF_COST	Comparison cost (costo1 for exchange rate)	double
TRAFFIC_TYPE	Traffic type	string
PABX_NAME	PABX name	string
PABX_DT	PABX time	dateTime
CALLID	CDR Id	int
TRANSF_TO	Transferred to	string
TRANSF_FROM	Transferred from	string
EXT_TYPE	Extension type	string
EXT_GROUP1	First extension grouping	string
EXT_GROUP2	Second First extension grouping	string
EXT_GROUP3	Third First extension grouping	string

Output of the WsGetGroupQuery, WsGetGroupQueryByCondition, WsGetGroupQueryByConditions methods

VALUE	DESCRIPTION	TYPE
GROUP1	Group field	string
TOT_COST	Total cost	double
AVG_COST	Average Cost	double
TOT_COST2	Total comparison cost	double
AVG_COST2	Average comparison cost	double
OUT_DURATION	Outgoing call duration (sec)	int
OUT_AVG_DURATION	Average call duration (sec)	double
OUT_COUNT	Total outgoing calls	int
IN_COUNT	Total incoming calls	int
IN_UNANSW_COUNT	Total incoming unanswered	int
IN_DURATION	Total duration - incoming calls (sec)	int
IN_AVG_TIME	Average duration – incoming calls (sec)	double
IN_RING_DURATION	Ring time duration – incoming calls	int
IN_RING_AVG_DURATION	Average ring time duration – incoming calls	int

Error output

In case of a handled error, a string type message is returned with a description of the error that occurred.

Example:
```
<DocumentElement xmlns="">
 <ERROR diffgr:id="ERROR1" msdata:rowOrder="0" diffgr:hasChanges="inserted">
   <MESSAGE>Access is denied due to invalid credentials</MESSAGE>
 </ERROR>
</DocumentElement>
```

Output examples

Simplified output example of the call list

```xml
<?xml version="1.0" encoding="utf-8"?>
<DataTable xmlns="http://www.telcen.it/ws">
 <xs:schema id="NewDataSet" xmlns="" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
   <xs:element name="NewDataSet" msdata:IsDataSet="true" msdata:MainDataTable="Table" msdata:Locale="">
    <xs:complexType>
     <xs:choice minOccurs="0" maxOccurs="unbounded">
      <xs:element name="Table">
       <xs:complexType>
        <xs:sequence>
         <xs:element name="COST" type="xs:decimal" minOccurs="0" />
         <xs:element name="TARIFF" type="xs:decimal" minOccurs="0" />
         <xs:element name="DATE" type="xs:dateTime" minOccurs="0" />
         <xs:element name="DURATION" type="xs:dateTime" minOccurs="0" />
         <xs:element name="TIME" type="xs:dateTime" minOccurs="0" />
         <xs:element name="ANSWER" type="xs:dateTime" minOccurs="0" />
         <xs:element name="TRANSF" type="xs:short" minOccurs="0" />
         <xs:element name="AREA" type="xs:string" minOccurs="0" />
         <xs:element name="COST_CENTRE" type="xs:string" minOccurs="0" />
         <xs:element name="EXT" type="xs:string" minOccurs="0" />
         <xs:element name="LINE" type="xs:string" minOccurs="0" />
         <xs:element name="COUNTRY" type="xs:string" minOccurs="0" />
         <xs:element name="NAME" type="xs:string" minOccurs="0" />
         <xs:element name="EXT_NAME" type="xs:string" minOccurs="0" />
         <xs:element name="NUMBER" type="xs:string" minOccurs="0" />
         <xs:element name="DEP" type="xs:string" minOccurs="0" />
         <xs:element name="CALL_TYPE" type="xs:string" minOccurs="0" />
         <xs:element name="DEST_TYPE" type="xs:string" minOccurs="0" />
         <xs:element name="CURR" type="xs:string" minOccurs="0" />
         <xs:element name="REF_CURR" type="xs:string" minOccurs="0" />
         <xs:element name="REF_COST" type="xs:double" minOccurs="0" />
         <xs:element name="TRAFFIC_TYPE" type="xs:string" minOccurs="0" />
         <xs:element name="PABX_NAME" type="xs:string" minOccurs="0" />
         <xs:element name="TRANSF_TO" type="xs:string" minOccurs="0" />
         <xs:element name="TRANSF_FROM" type="xs:string" minOccurs="0" />
         <xs:element name="EXT_TYPE" type="xs:string" minOccurs="0" />
         <xs:element name="EXT_GROUP1" type="xs:string" minOccurs="0" />
         <xs:element name="EXT_GROUP2" type="xs:string" minOccurs="0" />
         <xs:element name="EXT_GROUP3" type="xs:string" minOccurs="0" />
        </xs:sequence>
       </xs:complexType>
      </xs:element>
     </xs:choice>
    </xs:complexType>
   </xs:element>
 </xs:schema>
 <diffgr:diffgram xmlns:msdata="urn:schemas-microsoft-com:xml-msdata" xmlns:diffgr="urn:schemas-microsoft-
```

```
com:xml-diffgram-v1">
  <NewDataSet xmlns="">
    <Table diffgr:id="Table1" msdata:rowOrder="0">
      <COST>0.0000</COST>
      <TARIFF>0.0000</TARIFF>
      <DATE>2009-06-10T00:00:00+02:00</DATE>
      <DURATION>1899-12-30T00:02:38+01:00</DURATION>
      <TIME>1899-12-30T15:09:50.063+01:00</TIME>
      <ANSWER>1899-12-30T00:00:00+01:00</ANSWER>
      <TRANSF>1</TRANSF>
      <COST_CENTRE>Commerciale</COST_CENTRE>
      <EXT>369</EXT>
      <LINE>6</LINE>
      <EXT_NAME>Rosa Bianchi</EXT_NAME>
      <DEP>Vendite estero</DEP>
      <CALL_TYPE>I</CALL_TYPE>
      <REF_CURR>EUR</REF_CURR>
      <REF_COST>0</REF_COST>
      <TRAFFIC_TYPE>E</TRAFFIC_TYPE>
    </Table>
    <Table diffgr:id="Table2" msdata:rowOrder="1">
      <COST>0.1191</COST>
      <TARIFF>0.0890</TARIFF>
      <DATE>2009-06-10T00:00:00+02:00</DATE>
      <DURATION>1899-12-30T00:00:36+01:00</DURATION>
      <TIME>1899-12-30T15:09:40.06+01:00</TIME>
      <ANSWER>1899-12-30T00:00:00+01:00</ANSWER>
      <TRANSF>0</TRANSF>
      <AREA>Roma</AREA>
      <COST_CENTRE>Commerciale</COST_CENTRE>
      <EXT>368</EXT>
      <LINE>3</LINE>
      <COUNTRY>Italia</COUNTRY>
      <EXT_NAME>Ferruccio Palmerini</EXT_NAME>
      <NUMBER>0637705267</NUMBER>
      <DEP>Helpdesk</DEP>
      <CALL_TYPE>O</CALL_TYPE>
      <DEST_TYPE>Nazionali</DEST_TYPE>
      <REF_CURR>EUR</REF_CURR>
      <REF_COST>0.1191</REF_COST>
      <TRAFFIC_TYPE>E</TRAFFIC_TYPE>
    </Table>
  </NewDataSet>
 </diffgr:diffgram>
</DataTable>
```

Extended output example of the call list

```xml
<?xml version="1.0" encoding="utf-8"?>
<DataTable xmlns="http://www.telcen.it/ws">
  <xs:schema id="NewDataSet" xmlns="" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
    <xs:element name="NewDataSet" msdata:IsDataSet="true" msdata:MainDataTable="Table" msdata:Locale="">
      <xs:complexType>
        <xs:choice minOccurs="0" maxOccurs="unbounded">
          <xs:element name="Table">
            <xs:complexType>
              <xs:sequence>
                <xs:element name="COST" type="xs:decimal" minOccurs="0" />
                <xs:element name="COST_2" type="xs:decimal" minOccurs="0" />
                <xs:element name="COST_DIFF" type="xs:decimal" minOccurs="0" />
                <xs:element name="TARIFF" type="xs:decimal" minOccurs="0" />
                <xs:element name="DATE" type="xs:dateTime" minOccurs="0" />
                <xs:element name="DURATION" type="xs:dateTime" minOccurs="0" />
                <xs:element name="TIME" type="xs:dateTime" minOccurs="0" />
                <xs:element name="ANSWER" type="xs:dateTime" minOccurs="0" />
                <xs:element name="TRANSF" type="xs:short" minOccurs="0" />
                <xs:element name="PKID" type="xs:int" minOccurs="0" />
                <xs:element name="PULSES" type="xs:int" minOccurs="0" />
                <xs:element name="PERC_DIFF" type="xs:float" minOccurs="0" />
                <xs:element name="AREA" type="xs:string" minOccurs="0" />
                <xs:element name="FIELD1" type="xs:string" minOccurs="0" />
                <xs:element name="FIELD2" type="xs:string" minOccurs="0" />
                <xs:element name="FIELD3" type="xs:string" minOccurs="0" />
                <xs:element name="FIELD4" type="xs:string" minOccurs="0" />
                <xs:element name="CARRIER1" type="xs:string" minOccurs="0" />
                <xs:element name="CARRIER2" type="xs:string" minOccurs="0" />
                <xs:element name="COST_CENTRE" type="xs:string" minOccurs="0" />
                <xs:element name="ACCOUNT" type="xs:string" minOccurs="0" />
                <xs:element name="EXT" type="xs:string" minOccurs="0" />
                <xs:element name="TIME_BAND" type="xs:string" minOccurs="0" />
                <xs:element name="DAY" type="xs:string" minOccurs="0" />
                <xs:element name="LINE" type="xs:string" minOccurs="0" />
                <xs:element name="COUNTRY" type="xs:string" minOccurs="0" />
                <xs:element name="NAME" type="xs:string" minOccurs="0" />
                <xs:element name="EXT_NAME" type="xs:string" minOccurs="0" />
                <xs:element name="NUMBER" type="xs:string" minOccurs="0" />
                <xs:element name="DEP" type="xs:string" minOccurs="0" />
                <xs:element name="SITE" type="xs:string" minOccurs="0" />
                <xs:element name="CALL_TYPE" type="xs:string" minOccurs="0" />
                <xs:element name="DEST_TYPE" type="xs:string" minOccurs="0" />
                <xs:element name="CURR" type="xs:string" minOccurs="0" />
                <xs:element name="CURR_EXC" type="xs:double" minOccurs="0" />
                <xs:element name="UTC_DT" type="xs:dateTime" minOccurs="0" />
                <xs:element name="DEP_2" type="xs:string" minOccurs="0" />
                <xs:element name="COST_CENTER_2" type="xs:string" minOccurs="0" />
                <xs:element name="REF_CURR" type="xs:string" minOccurs="0" />
                <xs:element name="DATE_2" type="xs:dateTime" minOccurs="0" />
                <xs:element name="TIME_2" type="xs:dateTime" minOccurs="0" />
```

```xml
<xs:element name="HQ" type="xs:string" minOccurs="0" />
<xs:element name="HQ_2" type="xs:string" minOccurs="0" />
<xs:element name="GROUP_NAME" type="xs:string" minOccurs="0" />
<xs:element name="REF_COST" type="xs:double" minOccurs="0" />
<xs:element name="TRAFFIC_TYPE" type="xs:string" minOccurs="0" />
<xs:element name="PABX_NAME" type="xs:string" minOccurs="0" />
<xs:element name="PABX_DT" type="xs:dateTime" minOccurs="0" />
<xs:element name="CALLID" type="xs:int" minOccurs="0" />
<xs:element name="TRANSF_TO" type="xs:string" minOccurs="0" />
<xs:element name="TRANSF_FROM" type="xs:string" minOccurs="0" />
<xs:element name="EXT_TYPE" type="xs:string" minOccurs="0" />
<xs:element name="EXT_GROUP1" type="xs:string" minOccurs="0" />
<xs:element name="EXT_GROUP2" type="xs:string" minOccurs="0" />
<xs:element name="EXT_GROUP3" type="xs:string" minOccurs="0" />
      </xs:sequence>
     </xs:complexType>
    </xs:element>
   </xs:choice>
  </xs:complexType>
 </xs:element>
</xs:schema>
<diffgr:diffgram xmlns:msdata="urn:schemas-microsoft-com:xml-msdata" xmlns:diffgr="urn:schemas-microsoft-com:xml-diffgram-v1">
  <NewDataSet xmlns="">
   <Table diffgr:id="Table1" msdata:rowOrder="0">
    <COST>0.0000</COST>
    <COST_2>0.0000</COST_2>
    <COST_DIFF>0.0000</COST_DIFF>
    <TARIFF>0.0000</TARIFF>
    <DATE>2009-06-10T00:00:00+02:00</DATE>
    <DURATION>1899-12-30T00:02:38+01:00</DURATION>
    <TIME>1899-12-30T15:09:50.063+01:00</TIME>
    <ANSWER>1899-12-30T00:00:00+01:00</ANSWER>
    <TRANSF>1</TRANSF>
    <PKID>1482007</PKID>
    <PULSES>0</PULSES>
    <PERC_DIFF>0</PERC_DIFF>
    <COST_CENTRE>Commerciale</COST_CENTRE>
    <EXT>369</EXT>
    <DAY>Mer</DAY>
    <LINE>6</LINE>
    <EXT_NAME>Rosa Bianchi</EXT_NAME>
    <DEP>Vendite estero</DEP>
    <SITE>SITE</SITE>
    <CALL_TYPE>I</CALL_TYPE>
    <CURR_EXC>1</CURR_EXC>
    <REF_CURR>EUR</REF_CURR>
    <REF_COST>0</REF_COST>
    <TRAFFIC_TYPE>E</TRAFFIC_TYPE>
    <PABX_DT>2005-03-07T17:21:41+01:00</PABX_DT>
   </Table>
   <Table diffgr:id="Table2" msdata:rowOrder="1">
    <COST>0.1191</COST>
```

```
      <COST_2>0.0390</COST_2>
      <COST_DIFF>-0.0801</COST_DIFF>
      <TARIFF>0.0890</TARIFF>
      <DATE>2009-06-10T00:00:00+02:00</DATE>
      <DURATION>1899-12-30T00:00:36+01:00</DURATION>
      <TIME>1899-12-30T15:09:40.06+01:00</TIME>
      <ANSWER>1899-12-30T00:00:00+01:00</ANSWER>
      <TRANSF>0</TRANSF>
      <PKID>1482008</PKID>
      <PULSES>0</PULSES>
      <PERC_DIFF>-205.384613</PERC_DIFF>
      <AREA>Roma</AREA>
      <FIELD1>2</FIELD1>
      <CARRIER1>Telecom Italia Affari (15-06-2004)</CARRIER1>
      <CARRIER2>Nodalis Business Club (01-01-2004)</CARRIER2>
      <COST_CENTRE>Commerciale</COST_CENTRE>
      <EXT>368</EXT>
      <TIME_BAND>Intera</TIME_BAND>
      <DAY>Gio</DAY>
      <LINE>3</LINE>
      <COUNTRY>Italia</COUNTRY>
      <EXT_NAME>Ferruccio Palmerini</EXT_NAME>
      <NUMBER>0637705267</NUMBER>
      <DEP>Helpdesk</DEP>
      <SITE>SITE</SITE>
      <CALL_TYPE>O</CALL_TYPE>
      <DEST_TYPE>Nazionali</DEST_TYPE>
      <CURR_EXC>1</CURR_EXC>
      <REF_CURR>EUR</REF_CURR>
      <REF_COST>0.1191</REF_COST>
      <TRAFFIC_TYPE>E</TRAFFIC_TYPE>
      <PABX_DT>2004-01-27T14:56:45+01:00</PABX_DT>
    </Table>
  </NewDataSet>
 </diffgr:diffgram>
</DataTable>
```

WsGetGroupQuery output example

```xml
<?xml version="1.0" encoding="utf-8"?>
<DataTable xmlns="http://www.telcen.it/ws">
 <xs:schema id="NewDataSet" xmlns="" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
   <xs:element name="NewDataSet" msdata:IsDataSet="true" msdata:MainDataTable="Table" msdata:Locale="">
    <xs:complexType>
     <xs:choice minOccurs="0" maxOccurs="unbounded">
      <xs:element name="Table">
       <xs:complexType>
        <xs:sequence>
         <xs:element name="GROUP1" type="xs:string" minOccurs="0" />
         <xs:element name="TOT_COST" type="xs:double" minOccurs="0" />
         <xs:element name="AVG_COST" type="xs:double" minOccurs="0" />
         <xs:element name="TOT_COST2" type="xs:double" minOccurs="0" />
         <xs:element name="AVG_COST2" type="xs:double" minOccurs="0" />
         <xs:element name="OUT_DURATION" type="xs:int" minOccurs="0" />
         <xs:element name="OUT_AVG_DURATION" type="xs:double" minOccurs="0" />
         <xs:element name="OUT_COUNT" type="xs:int" minOccurs="0" />
         <xs:element name="IN_COUNT" type="xs:int" minOccurs="0" />
         <xs:element name="IN_UNANSW_COUNT" type="xs:int" minOccurs="0" />
         <xs:element name="IN_DURATION" type="xs:int" minOccurs="0" />
         <xs:element name="IN_AVG_TIME" type="xs:double" minOccurs="0" />
         <xs:element name="IN_RING_DURATION" type="xs:int" minOccurs="0" />
         <xs:element name="IN_RING_AVG_DURATION" type="xs:int" minOccurs="0" />
<xs:element name="REF_CURRENCY" type="xs:string" minOccurs="0" />
        </xs:sequence>
       </xs:complexType>
      </xs:element>
     </xs:choice>
    </xs:complexType>
   </xs:element>
 </xs:schema>
 <diffgr:diffgram xmlns:msdata="urn:schemas-microsoft-com:xml-msdata" xmlns:diffgr="urn:schemas-microsoft-
com:xml-diffgram-v1">
  <NewDataSet xmlns="">
   <Table diffgr:id="Table1" msdata:rowOrder="0">
    <GROUP1>302</GROUP1>
    <TOT_COST>0</TOT_COST>
    <AVG_COST>0</AVG_COST>
    <TOT_COST2>0</TOT_COST2>
    <AVG_COST2>0</AVG_COST2>
    <OUT_COUNT>0</OUT_COUNT>
    <IN_COUNT>2</IN_COUNT>
    <IN_UNANSW_COUNT>0</IN_UNANSW_COUNT>
    <IN_DURATION>799</IN_DURATION>
    <IN_AVG_TIME>399.5</IN_AVG_TIME>
    <IN_RING_DURATION>0</IN_RING_DURATION>
    <IN_RING_AVG_DURATION>0</IN_RING_AVG_DURATION>
           <REF_CURRENCY>EUR</REF_CURRENCY>
   </Table>
   <Table diffgr:id="Table2" msdata:rowOrder="1">
```

```xml
      <GROUP1>307</GROUP1>
      <TOT_COST>0</TOT_COST>
      <AVG_COST>0</AVG_COST>
      <TOT_COST2>0</TOT_COST2>
      <AVG_COST2>0</AVG_COST2>
      <OUT_COUNT>0</OUT_COUNT>
      <IN_COUNT>1</IN_COUNT>
      <IN_UNANSW_COUNT>0</IN_UNANSW_COUNT>
      <IN_DURATION>16</IN_DURATION>
      <IN_AVG_TIME>16</IN_AVG_TIME>
      <IN_RING_DURATION>2</IN_RING_DURATION>
      <IN_RING_AVG_DURATION>2</IN_RING_AVG_DURATION>
            <REF_CURRENCY>EUR</REF_CURRENCY>
    </Table>
    <Table diffgr:id="Table3" msdata:rowOrder="2">
      <GROUP1>308</GROUP1>
      <TOT_COST>0.0608</TOT_COST>
      <AVG_COST>0.020266666666666665</AVG_COST>
      <TOT_COST2>0.0146</TOT_COST2>
      <AVG_COST2>0.0048666666666666667</AVG_COST2>
      <OUT_DURATION>35</OUT_DURATION>
      <OUT_AVG_DURATION>35</OUT_AVG_DURATION>
      <OUT_COUNT>1</OUT_COUNT>
      <IN_COUNT>2</IN_COUNT>
      <IN_UNANSW_COUNT>0</IN_UNANSW_COUNT>
      <IN_DURATION>60</IN_DURATION>
      <IN_AVG_TIME>30</IN_AVG_TIME>
      <IN_RING_DURATION>6</IN_RING_DURATION>
      <IN_RING_AVG_DURATION>3</IN_RING_AVG_DURATION>
            <REF_CURRENCY>EUR</REF_CURRENCY>
    </Table>
  </NewDataSet>
 </diffgr:diffgram>
</DataTable>
```

Error output example

```xml
<?xml version="1.0" encoding="utf-8"?>
<DataTable xmlns="http://www.telcen.it/ws">
  <xs:schema id="NewDataSet" xmlns="" xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:msdata="urn:schemas-microsoft-com:xml-msdata">
    <xs:element name="NewDataSet" msdata:IsDataSet="true" msdata:MainDataTable="ERROR"
msdata:UseCurrentLocale="true">
      <xs:complexType>
        <xs:choice minOccurs="0" maxOccurs="unbounded">
          <xs:element name="ERROR">
            <xs:complexType>
              <xs:sequence>
                <xs:element name="MESSAGE" type="xs:string" minOccurs="0" />
              </xs:sequence>
            </xs:complexType>
          </xs:element>
        </xs:choice>
      </xs:complexType>
    </xs:element>
  </xs:schema>
  <diffgr:diffgram xmlns:msdata="urn:schemas-microsoft-com:xml-msdata" xmlns:diffgr="urn:schemas-microsoft-
com:xml-diffgram-v1">
    <DocumentElement xmlns="">
      <ERROR diffgr:id="ERROR1" msdata:rowOrder="0" diffgr:hasChanges="inserted">
        <MESSAGE>Access is denied due to invalid credentials</MESSAGE>
      </ERROR>
    </DocumentElement>
  </diffgr:diffgram>
</DataTable>
```

Tutorial

How to use BE4 Web Services with Microsoft Visual Studio 2005

In order to use BE4 Web Services, please follow here under steps.

Download WSDL file

WSDL file (Web Service Description Language) provides a description of the web service functions and allows the development to creating the objects required to the service use.
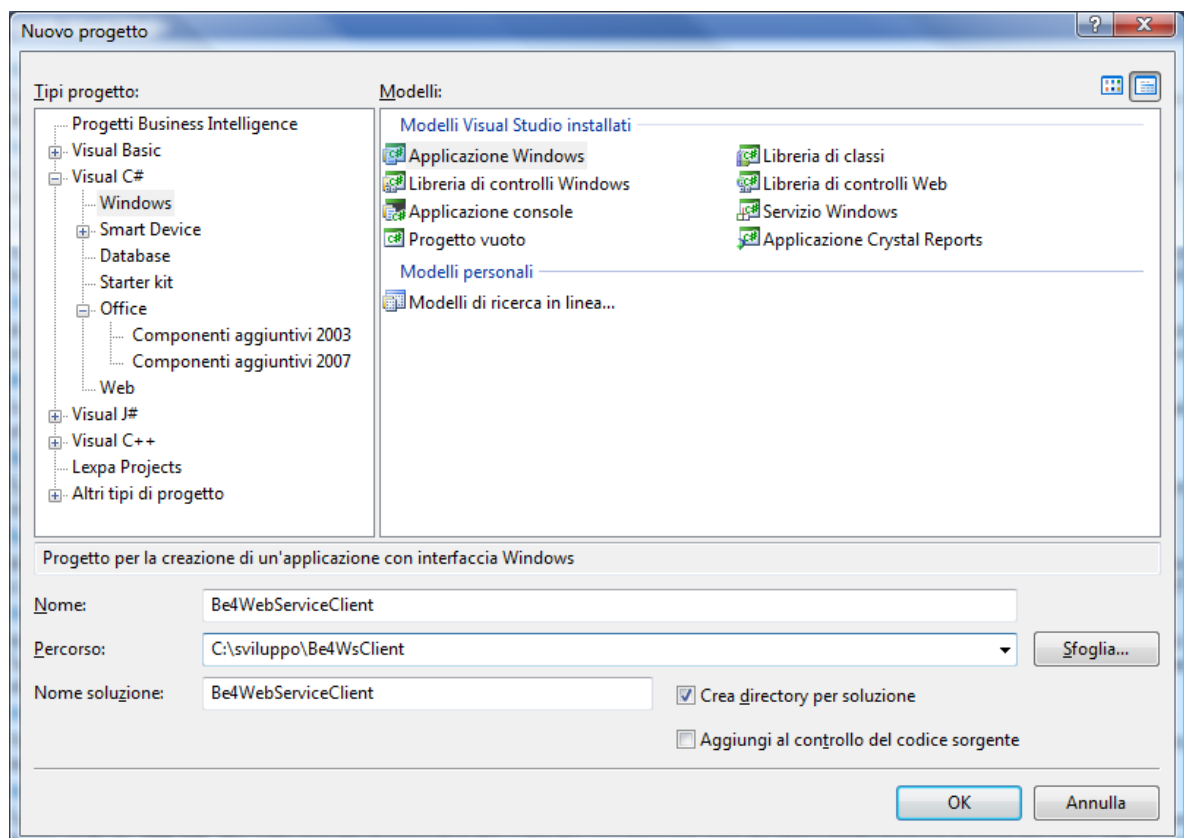
Visual Studio programming languages use web services through objects acting as intermediaries for server processes. Before such objects can be used it is necessary that they are generated using the WSDL file.

Note
Before starting, create a new applications and import a WSDL file reference.
An application that uses web services may not necessarily be a Client type application. Many times web services are used by other Web applications or services without graphic interface interpreting the XML generated by the web service.
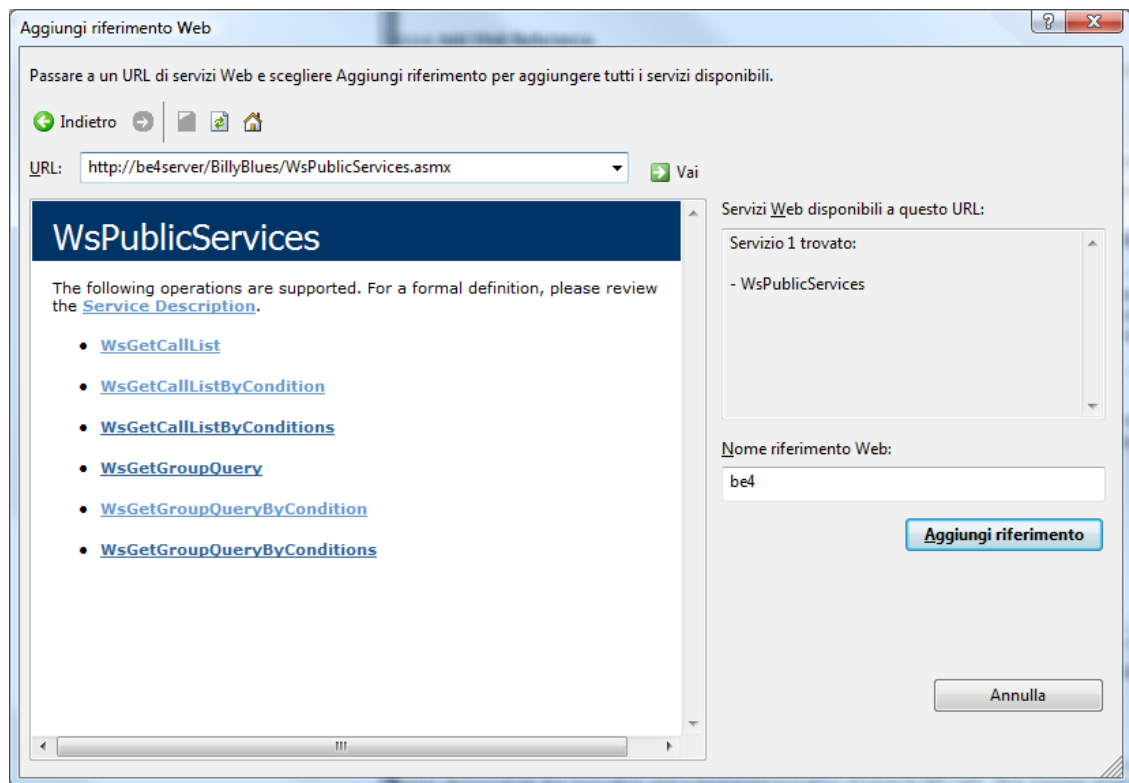
Create a new Windows Application Project

Adding a reference

Add a new web reference to the address

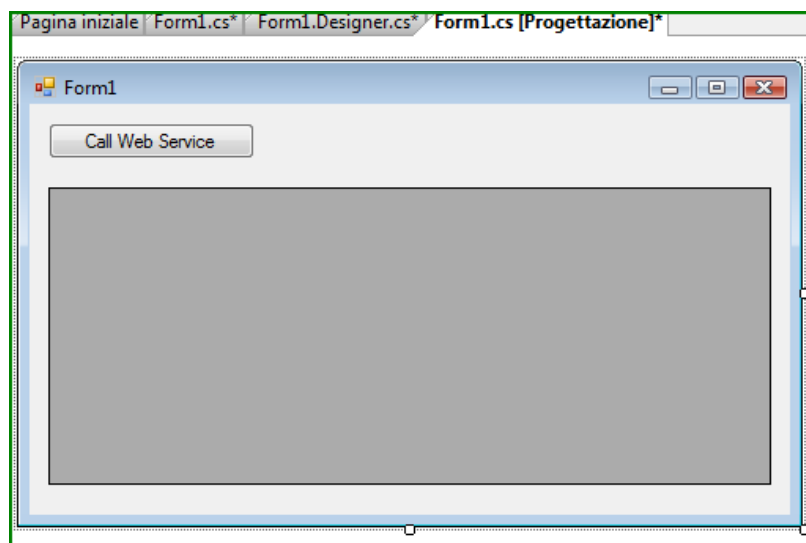http://BE4server/BluesEnterprise/WsPublicServices.asmx

Change the web reference name to BE4.

Adding controls

Add a 'Button' and a 'dataGridView' type control to the main window

In the form code, add string

```
using BE4WebServiceClient;
```

Double click the button and enter the following code:

```csharp
private void button1_Click(object sender, EventArgs e)
{
    BE4.WsPublicServices ws = new BE4.WsPublicServices();

    ws.Url = "http://matteoc/BillyBlues/WsPublicServices.asmx";

    DataTable dt = ws.WsGetGroupQuery("blues", "blues", BE4.enPeriodType.LAST_MONTH,
BE4.enFieldsForGroup.COUNTRY);

    if (dt != null && dt.Rows.Count > 0)
    {
        dataGridView1.DataSource = dt;
        dataGridView1.AutoGenerateColumns = true;
        dataGridView1.Refresh();
    }
}
```
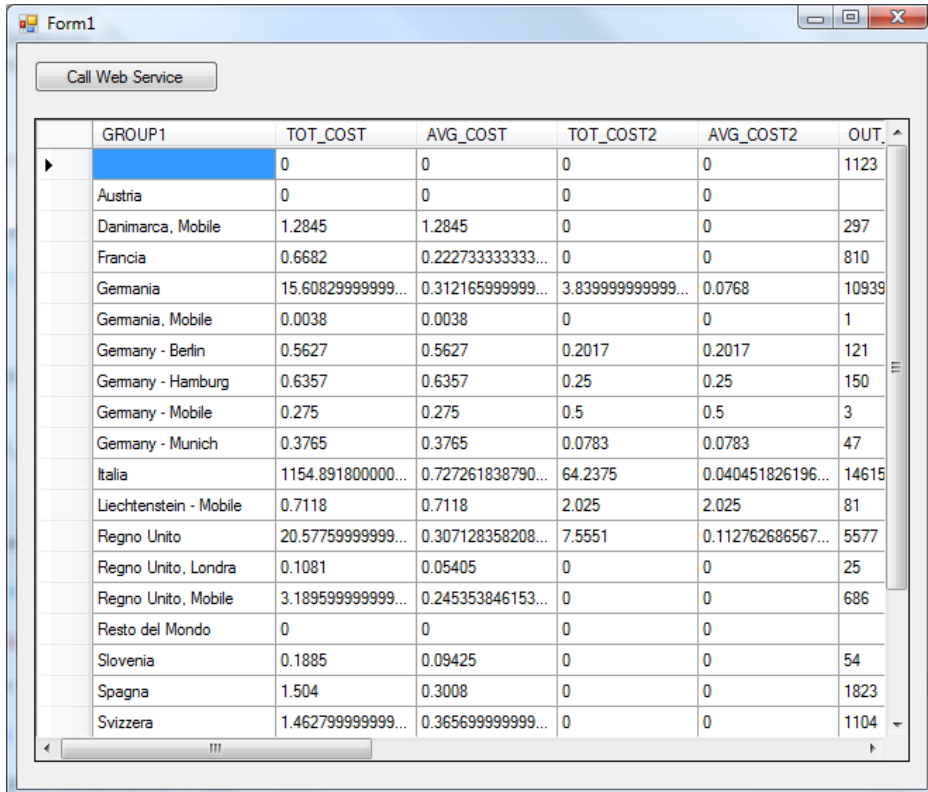
Run the program

Run the program (F5 key) and click 'Call Web Service', if the server is available, a table will display last month call grouped by Country (BE4.enFieldsForGroup.COUNTRY*)*

GROUP1	TOT_COST	AVG_COST	TOT_COST2	AVG_COST2	OUT_
	0	0	0	0	1123
Austria	0	0	0	0	
Danimarca, Mobile	1.2845	1.2845	0	0	297
Francia	0.6682	0.222733333333...	0	0	810
Germania	15.60829999999...	0.312165999999...	3.83999999999...	0.0768	10939
Germania, Mobile	0.0038	0.0038	0	0	1
Germany - Berlin	0.5627	0.5627	0.2017	0.2017	121
Germany - Hamburg	0.6357	0.6357	0.25	0.25	150
Germany - Mobile	0.275	0.275	0.5	0.5	3
Germany - Munich	0.3765	0.3765	0.0783	0.0783	47
Italia	1154.891800000...	0.727261838790...	64.2375	0.040451826196...	14615
Liechtenstein - Mobile	0.7118	0.7118	2.025	2.025	81
Regno Unito	20.57759999999...	0.307128358208...	7.5551	0.112762686567...	5577
Regno Unito, Londra	0.1081	0.05405	0	0	25
Regno Unito, Mobile	3.189599999999...	0.245353846153...	0	0	686
Resto del Mondo	0	0	0	0	
Slovenia	0.1885	0.09425	0	0	54
Spagna	1.504	0.3008	0	0	1823
Svizzera	1.462799999999...	0.365699999999...	0	0	1104

Modify the code and add BE4.enFieldsForGroup.DEP value in place of BE4.enFieldsForGroup.COUNTRY to get, for example, last month report grouped by department.

Form1

GROUP1	TOT_COST	AVG_COST	TOT_COST2	AVG_COST2	OUT_DURATION
-	87.66	0.147575757575...	1.3196	0.002221548821...	63150
Amministrazione	17.96780000000...	0.029359150326...	7.544799999999...	0.012328104575...	7687
Direzione	15.84150000000...	0.368406976744...	16.4233	0.381937209302...	7828
Helpdesk	58.88429999999...	0.182304334365...	36.1362	0.111876780185...	40535
Hotel	0.215	0.05375	0.07	0.0175	247
Marketing	14.6214	0.417754285714...	5.590299999999...	0.159722857142...	2956
Sales	968.1563000000...	4.840781500000...	0	0	27109
Sviluppo	3.0202	0.251683333333...	0.4874	0.040616666666...	2421
Tecnico	10.73870000000...	0.130959756097...	3.926	0.047878048780...	7613
Vendite	14.82190000000...	0.228029230769...	11.86920000000...	0.182603076923...	7162
Vendite estero	17.9342	0.427004761904...	11.32749999999...	0.269702380952...	4144

Contact us for all your needs

In case you need support, immediately call us on +39 0584.943232 (Monday – Friday 8:30 – 12:30 and 14:00 - 18:00) or mail to support@imagicle.com.