

# **Oracle® Service Architecture Leveraging Tuxedo (SALT)**

Reference Guide

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# Oracle SALT Command Reference

The Oracle SALT Command Reference describes system processes and commands delivered with the Oracle SALT software.

[Table 1](#) lists Oracle SALT commands and functions.

**Table 1 Oracle SALT Commands and Functions**

Name	Description
<a href="#">buildscaclient</a>	Builds processes that call SCA components.
<a href="#">buildscacomponent</a>	Builds SCA components.
<a href="#">buildscaserver</a>	Parses SCDL definitions and interfaces and produces a Tuxedo-deployable server and elements.
<a href="#">GWWS (5)</a>	Web service gateway server.
<a href="#">mkfldfromschema,</a> <a href="#">mkfld32fromschema</a>	The <a href="#">mkfldfromschema</a> and <a href="#">mkfld32fromschema</a> commands take an XML schema as input and produce a field table.
<a href="#">mkviewfromschema,</a> <a href="#">mkview32fromschema</a>	The <a href="#">mkviewfromschema</a> and <a href="#">mkview32fromschema</a> commands take an XML schema as input and produce a view file.
<a href="#">scaadmin</a>	SCA server management command interpreter.

**Table 1 Oracle SALT Commands and Functions**

Name	Description
<code>SCAHOST (5)</code>	Generic server for Python, Ruby, or PHP components.
<code>scapasswordtool</code>	Manages passwords for Oracle Tuxedo authentication in SCA clients.
<code>scastructc32, scastructc(1)</code>	Oracle SALT structure description file compiler
<code>scastructdis32, scastructdis</code>	Binary structure and view files disassembler.
<code>scatuxgen(1)</code>	Generates Oracle Tuxedo Service Metadata Repository interface information from an SCA interface.
<code>setSCAPasswordCallback(3c)</code>	Sets the callback for retrieving a password associated with an identifier in a <code>&lt;binding.atmi&gt;</code> element.
<code>tmscd(1)</code>	Command line utility used to activate and deactivate service contract discovery.
<code>tmwsdlgen</code>	WSDL document generator.
<code>tuxscagen(1)</code>	Generates SCA, SCDL, and server-side interface files for Tuxedo services.
<code>WEBHNDLR (5)</code>	Generic Web Application server handler for PHP, Python or Ruby applications.
<code>wsadmin</code>	Oracle SALT administration command interpreter.
<code>wsdlcvt</code>	WSDL document converter.
<code>wsloadcf</code>	Reads SALT Deployment file and other referenced artifacts. Loads a binary <code>SALTCONFIG</code> file.

## buildscaclient

### Name

`buildscaclient` – Builds processes that call SCA components.

## Synopsis

```
buildscaclient -c default_component [-v] [-h] [-k] [-o name] [-s SCARoot]
[-f firstfiles] [-l lastfiles] [-S structurefiles]
```

## Description

This command is used to build client processes that can call SCA components hosted in Tuxedo environments. The command combines files, specified using the `-f` and `-l` options, with the SCA and standard Tuxedo ATMI libraries to form a client application. The client application is built using the default C++ language compile command defined for the operating system in use, unless overridden using the `CC` environment variable.

All specified `.c` and `.cpp` files are compiled in one invocation of the compilation system based on the operating system. Users may specify the compiler to invoke by setting the `CC` environment variable to the name of the compiler. If the `CC` environment variable is not defined when `buildscaclient` is invoked, the default C++ language compile command for the operating system is invoked to compile all `.c` and `.cpp` files.

You may specify additional options to be passed to the compiler by setting the `CFLAGS` or the `CPPFLAGS` environment variables. If `CFLAGS` is not defined when `buildobjclient` is invoked, then `buildscaclient` uses the value of `CPPFLAGS`, if that variable is defined.

## Parameters and Options

`buildscaclient` supports the following parameters and options:

### **-c defaultcomponent**

Required parameter. Indicates which component should be used for this application.

### **[-v]**

Specifies that the `buildscaclient` command should work in verbose mode. In particular, it writes the compile command to its standard output.

### **[-k]**

Maintains the generated stubs. `buildscaclient` generates proxy files that allow dynamic interfacing of clients and references. This is normally compiled and then removed when the proxy is built. This option indicates that the source file should be retained.

**Caution:** The generated contents of this file may change from release to release. It is advised that you *do not* depend on the data structures and interfaces exposed in this file. This option is provided to aid in debugging of build problems.

**[-o name]**

Specifies the name of the client application generated by this command. If the name is not supplied, the application file is named `client<.type>`, where `type` is an extension that is dependent on the operating system. For example, on a UNIX system, there would not be a type, but on a Windows system, the type would be `.EXE`.

**[-s scaroot]**

Specifies the location of SCA root, where the SCDL files for the required components are located. If not set, the `APPDIR` environment value is used.

**[-f firstfiles]**

Specifies the file to be included first in the compile and link phases of the `buildscaclient` command. The specified file is included before the SCA libraries are included. There are two ways of specifying a file or files:

Filename Specification	Description
<code>-f firstfile</code>	One file is specified
<code>-f "file1.cpp file2.cpp file3.cpp ..."</code>	Multiple files may be specified if their names are enclosed in quotation marks and are separated using white spaces.

**Note:** Filenames that include spaces are not supported.  
The `-f` option may be specified multiple times.

**[-l lastfiles]**

Specifies a file to be included last in the compile and link phases of the `buildscaclient` command. The specified file is included after the SCA libraries are included. There are two ways of specifying the file, as shown in the following table.

Filename Specification	Description
<code>-l lastfile</code>	One file is specified
<code>-l "file1.cpp file2.cpp file3.cpp ..."</code>	Multiple files may be specified if their names are enclosed in quotation marks and are separated using white spaces.

**Note:** Filenames that include spaces are not supported.  
The `-l` option may be specified multiple times.

**[-S structurefiles]**

Specifies an SCA structure description file. The structure description file may be either a source file or a binary structure description file. If more than one file is specified, file names must be separated by white space and the entire list must be enclosed in quotation marks. The `-s` option may be specified multiple times on the same command line.

The use of structure description files is optional. If a structure description is not provided for a particular structure then the source code where the structure is defined is used to describe the structure; in SCA-ATMI mode, the FML32 field name corresponding to each structure element is the same as the name of the structure element.

**Note:** Filenames that include spaces are not supported.  
The `-s` option may be specified multiple times.

## Environment Variables

Following is a list of environment variables for `buildSCAclient`:

**TUXDIR**

Finds the SCA libraries and includes files to use when compiling the client applications.

**CC**

Indicates the compiler for all files with `.c` or `.cpp` file extensions. If not defined, the default C++ language compile command is invoked to compile all `.c` and `.cpp` files, based on the operating system.

**CFLAGS**

Indicates any arguments that are passed as part of the compiler command line for any files with `.c` or `.cpp` file extensions. If `CFLAGS` does not exist in the `buildscaclient` command environment, the command checks for the `CPPFLAGS` environment variable.

**Note:** Arguments passed by the `CFLAGS` environment variable take priority over the `CPPFLAGS` variable.

**CPPFLAGS**

Contains a set of arguments that are passed as part of the compiler command line for any files with `.c` or `.cpp` file extensions.

This is in addition to the command line option `-I$(TUXDIR)/include` for UNIX systems or the command line option `/I%TUXDIR%\include` for Windows systems, which is passed automatically by the `buildscaclient` command. If `CPPFLAGS` does not exist in the `buildscaclient` command environment, no compiler commands are added.

**LD\_LIBRARY\_PATH (UNIX systems)**

Indicates the directories that contain shared objects to be used by the compiler, in addition to the objects shared by the CORBA software. A colon (:) is used to separate the list of directories. Some UNIX systems require different environment variables:

- HP-UX systems use the SHLIB\_PATH environment variable
- AIX systems use LIBPATH

**LIB (Windows systems)**

Indicates a list of directories that contain the library files. A semicolon (;) is used to separate the list of directories.

## Portability

This utility can be used on any platform that supports the Oracle SALT environment.

## Example(s)

```
buildscaclient -s /myApplication/scaSrc/uBike -c uBike.client -f
uBikeClient.cpp -o uBikeClient
```

## See Also

[buildscaserver](#), [buildscacomponent](#)

[Oracle SALT SCA Programming](#) in the *Oracle SALT Programming Guide*

# buildscacomponent

## Name

`buildscacomponent` - builds SCA components

## Synopsis

```
buildscacomponent [-v] [-s scaroot] [-f firstfiles] [-l lastfiles] [-S
structurefiles] -c compositename[/componentname][,compositename,...] [-y]
[-k] [-h]
```

## Description

`buildscacomponent` is used to build individual SCA components from source code. The command reads SCDL source, finds the component(s) in the composite(s) file(s) specified, parses the corresponding `.componentType` file(s) and produces corresponding executable libraries, in the same location as the `.componentType` files.

The command automatically builds component implementations based on the contents of `<implementation.cpp>` elements as follows:

- The value of `/implementation.cpp/@header` is used to determine the name of the source and `componentType` files containing the implementation.

For example, an element such as

```
<implementation.cpp library="myLib" header="myComponentImpl.h"/>
```

causes `buildscacomponent` to look for a `myComponentImpl.cpp` file and compile it, along with stubs generated from its interface located in a corresponding `myComponentImpl.componentType` file.

Composites may contain one or more components, and the `buildscacomponent` command may build one or more composites in one pass. If more than one component is built, the files specified using the `-f` and `-l` switches are included in each component. To build a single component, the `-c composite/component` syntax should be used. This addresses the cases where individual components are made up of specific sets of source code or libraries.

All specified `.c` and `.cpp` files are compiled in one invocation of the compilation system for the operating system in use. Users may specify the compiler to be invoked by setting the `CC` environment variable to the name of the compiler. If the `CC` environment variable is not defined when `buildscacomponent` is invoked, the default C++ language compile command for the operating system in use is invoked to compile all `.c` and `.cpp` files.

Users may specify options to be passed to the compiler by setting the `CFLAGS` or the `CPPFLAGS` environment variable. If `CFLAGS` is not defined but `CPPFLAGS` is defined when `buildscacomponent` is invoked, the `CPPFLAGS` value is used.

## Parameters and Options

`buildscacomponent` supports the following parameters and options:

### **[-v]**

Specifies that `buildscacomponent` should work in verbose mode.

### **[-s scaroot]**

Specifies the location of the SCA root, where the SCDL file(s) for the component(s) is (are) located, and where the source code of components is processed.

If not specified, the value of `APPDIR` is used.

### **[-f firstfiles]**

Specifies a file to be included first in the compile and link phases of the `buildscacomponent` command. The specified file is included before the SCA libraries

are included. There are two ways of specifying a file or files, as shown in the following table.

**Table 2 File Specification Using [-f firstfiles]**

Filename Specification	Definition
<code>-f firstfile</code>	One file is specified
<code>-f "file1.cpp file2.cpp file3.cpp ..."</code>	Multiple files may be specified if their names are enclosed in quotation marks and are separated by white space.

**Note:** Filenames that include spaces are not supported.  
The `-f` option may be specified multiple times.

**[-l lastfiles]**

Specifies a file to be included last in the compile and link phases of the `buildscacomponent` command. The specified file is included after the SCA libraries are included. There are two ways of specifying a file, as shown in the following table.

**Table 3 File Specification Using [-l lastfiles]**

Filename Specification	Definition
<code>-l lastfile</code>	One file is specified
<code>-l "file1.cpp file2.cpp file3.cpp ..."</code>	Multiple files may be specified if their names are enclosed in quotation marks and are separated by white space.

**Note:** Filenames that include spaces are not supported.  
The `-l` option may be specified multiple times.

`-c {composite[,composite]|composite/component}`

Specifies the name(s) of the composite(s) processed. The composite(s) is (are) searched in `APPDIR` or in the SCDL directory specified above with the `-s` switch. If it cannot be found, the component libraries are not built.

A list of composites may be specified, in which case all the components listed in the composites will be built. If any of the composites cannot be found or an error is detected (incorrect name, composite does not have any ATMI service binding), a warning message



is displayed and the user is prompted to confirm whether the command should continue processing or abort.

If the composite/component notation is used, a single component contained in the specified composite is allowed. This notation covers the situation where specific source files specified with `-f` and `-l` need to be included in the build process of a component.

**[-y]**

Optionally forces processing of input files, automatically ignoring warnings, such as composites specified using the `-c` switch but not physically present from the root directory.

**[-k]**

Keeps the generated proxy and wrapper source. `buildscacomponent` generates proxy and wrapper code with data structures such as the method operation and parameter handling. This is normally compiled and then removed when the component is built. This option indicates that the source file should be kept (to see what the source filename is, use the `-v` option).

**Note:** The generated contents of this file may change from release to release. *Do Not* count on the data structures and interfaces exposed in this file. This option is provided to aid in debugging of build problems.

**[-s structurefiles]**

Specifies an SCA structure description file. The structure description file may be either a source file or a binary structure description file. If more than one file is specified, file names must be separated by white space and the entire list must be enclosed in quotation marks. The `-s` option may be specified multiple times on the same command line.

The use of structure description files is optional. If a structure description is not provided for a particular structure then the source code where the structure is defined is used describe the structure; in SCA-ATMI mode, the FML32 field name corresponding to each structure element is the same as the name of the structure element.

**Note:** Filenames that include spaces are not supported.  
The `-s` option may be specified multiple times.

## Environment Variables

**TUXDIR**

Finds the SCA libraries and include files to use when compiling the client applications.

**APPDIR**

Indicates the SCA application root location, where the top-level composite should reside.

## **CC**

Indicates the compiler to use to compile all files with `.c` or `.cpp` file extensions. If not defined, the default C++ language compile command for the operating system in use will be invoked to compile all `.c` and `.cpp` files.

## **CFLAGS**

Indicates any arguments that are passed as part of the compiler command line for any files with a `.c` or `.cpp` file extensions. If `CFLAGS` does not exist in the `buildscacomponent` command environment, the `buildscacomponent` command checks for the `CPPFLAGS` environment variable.

## **CPPFLAGS**

**Note:** Arguments passed by the `CFLAGS` environment variable take priority over the `CPPFLAGS` variable.

Contains a set of arguments that are passed as part of the compiler command line for any files with a `.c` or `.cpp` file extensions.

This is in addition to the command line option `-I$(TUXDIR)/include` for UNIX systems or the command line option `/I%TUXDIR%\include` for Windows systems, which is passed automatically by the `buildscacomponent` command. If `CPPFLAGS` does not exist in the `buildscacomponent` command environment, no compiler commands are added.

## **LD\_LIBRARY\_PATH (UNIX systems)**

Indicates which directories contain shared objects to be used by the compiler, in addition to the objects shared by the CORBA software. A colon (`:`) is used to separate the list of directories. Some UNIX systems require different environment variables: for HP-UX systems, use the `SHLIB_PATH` environment variable; for AIX, use `LIBPATH`.

## **LIB (Windows systems)**

Indicates a list of directories within which to find libraries. A semicolon (`;`) is used to separate the list of directories.

## Portability

This utility can be used on any platform that supports the Oracle SALT environment.

## Example(s)

```
buildscacomponent -f utils.c -c searchInventory,updateItem
```

## See also

[buildscaserver](#), [buildscaclient](#)

[Oracle SALT SCA Programming](#) in the *Oracle SALT Programming Guide*

# buildscaserver

## Name

`buildscaserver` – Builds an Oracle Tuxedo server containing SCA components.

## Synopsis

```
-o servername -c composite[,composite] [-v] [-s scaroot]
[-w] [-r rmname] [-y] [-k] [-t] [-S]
```

## Description

`buildscaserver` is used to build a Tuxedo server that is used to route requests to SCA components previously built with the `buildscacomponent` command. The command generates a main routine that contains bootstrap routines to route Tuxedo or SCA requests to SCA components, and compiles it to form a server host application. The server host application is built using the default C++ compiler provided for the platform.

If the SCDL code contains references or services with `<binding.ws>` elements, these are automatically converted into WSDF files for use by the Web Services gateway (GWWS). All SCA servers built using `buildscaserver` are multi-threaded servers.

## Parameters and Options

`buildscaserver` supports the following parameters and options:

### **-o servername**

Required. Specifies the name of the server application generated by this command.

### **-c compositename[,compositename]**

Required. Specifies the name of the composite hosted. The composite is searched for starting in `APPDIR`, or in the SCDL directory specified above with the `-s` switch. If it is not found, the server is not built. In case you specify a list of composites, then all the listed composites are hosted by the same Tuxedo server.

If any of the composites are not found or an error is detected such as `incorrect name` or `composite does not have any atmi service binding`, a warning message is displayed and the user is prompted to confirm whether the command should continue processing or abort.

### **[-v]**

Specifies that `buildscaserver` should work in verbose mode.

**[-s scaroot]**

Specifies the target location of the SCA root, where the SCDL files for the components to be deployed are located.

This directory has a layout suitable to SCA composites and components. Each composite is represented as a directory and contains components in the run-time form, which includes SCDL code and libraries. At run time, the server application uses this directory to find the run-time SCA components.

If components are using the Web Services binding, the root location also receives a WSDL definition file.

**[-w]**

Specifies that the generated server will host Web services binding enabled components. By default, a server hosting ATMI binding enabled components is generated. Both types of servers can host the same actual components simultaneously (i.e. there can exist an ATMI and a WS servers, both hosting the same components previously built using the `buildscacomponent` command).

**[-r rmname]**

Specifies the resource manager associated with this server. The value `rmname` must appear in the resource manager table located in `$TUXDIR/udataobj/RM` on UNIX systems or `%TUXDIR%\udataobj\RM` on Windows systems. Each entry in this file is of the following form:

```
rmname:rmstructure_name:library_names
```

Using the `rmname` value, the entry in `$TUXDIR/udataobj/RM` or `%TUXDIR%\udataobj\RM` automatically includes the associated libraries for the resource manager and sets up the interface between the transaction manager and the resource manager. The value `TUXEDO/SQL` includes the libraries for the Oracle Tuxedo System/SQL resource manager. Other values can be specified once they are added to the resource manager table. If the `-r` option is not specified, the null resource manager is used, by default.

**[-y]**

Optionally forces processing of input files, automatically ignoring warnings.

**[-k]**

Keeps the server main stub. `buildscaserver` generates a main stub with data structures such as the service table and a `main()` function. This is normally compiled and then removed when the server is built. This option indicates that the source file should be retained.

**Note:** To see the source filename, use the `-v` option.

**Caution:** The generated contents of this file may change from release to release. It is advised that you *do not* depend on the data structures and interfaces exposed in this file. This option is provided to aid in debugging build problems.

**[-t]**

Not used in current release.

**[-s]**

Required when the server makes use of C structure input or output buffers and the `-w` option is specified.

**Note:** When the `-w` option is not specified, `buildscaserver` uses ATMI binding to determine if structures are used. The `-s` option is not required.

The `buildscaserver -s` option *does not* take an option argument.

## Environment Variables

**TUXDIR**

Finds the SCA libraries and include files to use when compiling the client applications.

**CC**

Indicates the compiler to use to compile all files with `.c` or `.cpp` file extensions. If not defined, the default C++ language compile command is invoked to compile all `.c` and `.cpp` files.

**CFLAGS**

Indicates any arguments that are passed as part of the compiler command line for any files with a `.c` or `.cpp` file extensions. If `CFLAGS` does not exist in the `buildscaserver` command environment, the `buildscaserver` command checks for the `CPPFLAGS` environment variable.

**Note:** Arguments passed by the `CFLAGS` environment variable take priority over the `CPPFLAGS` variable.

**CPPFLAGS**

Contains a set of arguments that are passed as part of the compiler command line for any files with a `.c` or `.cpp` file extensions.

This is in addition to the command line option `"-I$(TUXDIR)/include"` for UNIX systems or the command line option `/I%TUXDIR%\include` for Windows systems, which is passed automatically by the `buildscaserver` command. If `CPPFLAGS` does not exist in the `buildscaserver` command environment, no compiler commands are added.

**LD\_LIBRARY\_PATH (UNIX systems)**

Indicates the directories that contain shared objects to be used by the compiler, in addition to the objects shared by the CORBA software. A colon (:) is used to separate the list of directories. Some UNIX systems require different environment variables:

- HP-UX systems use `SHLIB_PATH`
- AIX systems use `LIBPATH`

**LIB (Windows only)**

Indicates a list of directories where libraries are available. A semicolon (;) is used to separate the list of directories.

## Portability

This utility can be used on any platform that supports the Oracle SALT environment.

## Example(s)

```
buildscaserver -c uBike.server -o uBikeSCASvr
```

## Error Reporting

This command checks for the following inconsistencies in the SCDL code and reports error messages if:

- at least one syntax error in the SCDL files
- none of the composites contain any service with an ATMI binding
- at least one composite contains services defining ATMI bindings with incompatible `<remoteAccess>` elements. `<remoteAccess>` elements with a value of `WorkStation` are not supported by this command.
- `/binding.atmi/@requires` contains a legacy value and `/binding.atmi/map` elements contain values that conflict (for example, the same Tuxedo service name mapped to two or more different methods)

## See Also

[GWWS\(5\)](#), [buildscacomponent](#)

[Oracle SALT SCA Programming](#) in the *Oracle SALT Programming Guide*

# GWWS(5)

## Name

GWWS – Web service gateway server.

## Synopsis

```
GWWS SRVGRP="identifier" SRVID=number [other_parms]
CLOPT="-A -- -i InstanceID"
```

## Description

The GWWS server is the Web service gateway for Tuxedo applications, the core component of Oracle SALT. The GWWS gateway server provides communication with Web service programs via SOAP 1.1/1.2 protocols. The GWWS server has bi-directional (inbound/outbound) capability. It can accept SOAP requests from Web service applications and passes Tuxedo native calls to Tuxedo services (inbound). It also accepts Tuxedo ATMI requests and passes SOAP calls to Web service applications (outbound). GWWS servers are used as Tuxedo system processes and are described in the \*SERVERS section of the [UBBCONFIG](#) file.

The CLOPT option is a string of command-line options passed to the GWWS server when it is booted. The GWWS server accepts the following CLOPT options:

```
-i InstanceID
    Specifies the GWWS instance unique ID. It is used to distinguish multiple GWWS instances
    provided in the same Tuxedo domain. This value must be unique among multiple GWWS
    items within the UBBCONFIG file.
```

**Note:** The InstanceID value must be pre-defined in the <WSGateway> section of the Oracle SALT Deployment File.

## Environment Variables

The SALTCONFIG environment variable must be set before the GWWS server is booted. [Accesslog\(5\)](#) can be enabled by setting environment variable TMENABLEALOG=y .

## Deprecation

The following SALT 1.1 GWWS parameter is deprecated in the current release.

```
-c Config_file
    Specifies the SALT 1.1 configuration file.
```

**Note:** Starting with the SALT 2.0 release, the GWWS server loads the SALT configuration from the binary SALTCONFIG file instead of the XML-based configuration file. The

configuration file is no longer a GWWS server input parameter. The `SALTCONFIG` file must be generated using [wsloadcf](#) before booting GWWS servers.

## Diagnostics

For inbound call, if an error occurs during SOAP message processing, the error is logged. The error is also translated into appropriate SOAP fault and/or HTTP error status code and returned to the Web service client.

For outbound call, if an error occurs during processing, the error is logged. The error is also translated into appropriate Tuxedo system error code (`tperno`) and returned to the Tuxedo client.

## Example(s)

### Listing 1 GWWS Description in the UBBCONFIG File

---

```
*SERVERS

GWWS SRVGRP=GROUP1 SRVID=10
      CLOPT="-A -- -i GW1 "
GWWS SRVGRP=GROUP1 SRVID=11
      CLOPT="-A -- -i GW2 "
GWWS SRVGRP=GROUP2 SRVID=20
      CLOPT="-A -- -i GW3 "
```

---

## See Also

[UBBCONFIG\(5\)](#)

[tmwsdlgen](#)

[Oracle SALT Deployment File Reference](#)

[Oracle SALT Web Service Definition File Reference](#)

## mkfldfromschema, mkfld32fromschema

The `mkfldfromschema` and `mkfld32fromschema` commands take an XML schema as input and produce a field table. This table can be processed by the `mkfldhdr` or `mkfldhdr32` command or is loaded by programs that need it. `mkfldfromschema` is used with 16-bit FML and `mkfld32fromschema` is used with 32-bit FML.



These commands have the following restrictions:

- Attributes cannot be specified
- Restrictions are ignored because their meaning is application-related

## Name

mkfldfromschema, mkfld32fromschema – Generates field table from an XML schema

## Synopsis

```
mkfldfromschema [{-i schema|-u schemaurl}] [-b basenumber] ]-o outputfile]
mkfld32fromschema [{-i schema|-u schemaurl}] [-b basenumber] ]-o
outputfile]
```

## Description

These commands take an XML schema as input and generate a field table. The XML schema may be specified using either the `-i` option or the `-u` option. If neither option is specified, the schema is read from standard input.

## Parameters and Options

mkfldfromschema and mkfld32fromschema supports the following options:

### **-b basenumber**

Adds a `*base basenumber` line to the generated field table.

### **-i schema**

Displays the name of a file containing an XML schema. The `-i` option cannot be specified in conjunction with the `-u` option.

### **-u schemaurl**

A URL where the input schema is located. The URL must start with `http://`. The `-u` option cannot be specified in conjunction with the `-i` option.

### **-o outputfile**

The name of a file that will contain the field table. If this option is not specified, the field table will be written to standard output.

## Portability

This utility can be used on any platform that supports the Oracle Tuxedo server environment.

## See Also

[mkviewfromschema](#), [mkview32fromschema](#)

## mkviewfromschema, mkview32fromschema

The `mkviewfromschema` and `mkview32fromschema` commands take an XML schema as input and produce a view file. This file can be processed by the `viewc` or `viewc32` command.

`mkviewfromschema` is used with 16-bit views and `mkview32fromschema` is used with 32-bit views.

### Name

`mkviewfromschema, mkview32fromschema` – Generates view table from an XML schema

### Synopsis

```
mkviewfromschema [{-i schema|-u schemaurl}] [-o outputfile]
```

```
mkview32fromschema [{-i schema|-u schemaurl}] [-o outputfile]
```

### Description

These commands take an XML schema as input and generate a view file. The XML schema may be specified using either the `-i` option or the `-u` option. If neither option is specified, the schema is read from standard input.

### Options

`mkviewfromschema, mkview32fromschema` supports the following options:

**-i schema**

The name of a file containing an XML schema. The `-i` option cannot be specified in conjunction with the `-u` option.

**-u schemaurl**

A URL where the input schema is located. The URL must start with `http://`. The `-u` option cannot be specified in conjunction with the `-i` option.

**-o outputfile**

The name of a file that contains the output view file. If this option is not specified, the field table is written to standard output.

### Portability

This utility can be used on any platform that supports the Oracle Tuxedo server environment.

### See Also

[mkfldfromschema, mkfld32fromschema](#)

[SDO for C++ Specification V2.1](#) published December, 2006

# scaadmin

## Name

scaadmin – SCA server management command interpreter

## Synopsis

scaadmin [-v]

## Description

Use the `scaadmin` command to dynamically redeploy SCA composites or display statistics and status of individual services. The `TUXCONFIG` environment variable is used to determine the location where the Tuxedo configuration file is loaded.

This command has no effect on servers that have not been built using the `buildscaserver(1)` command.

## Options

The `scaadmin` command supports the following option:

`[-v ]`

Causes `scaadmin` to display the Oracle SALT version number, SALT Patch Level. The command exits after print out.

`scaadmin` must run on an active node.

## Commands

**default** [-m machine] [-g groupname] [-i srvid] ] [-s servername]

Sets the corresponding argument to be the default machine name, groupname, server id, or servername. If the default command is entered with no arguments, the current defaults are printed.

**reload** [-m machine] [-g groupname] [-i srvid] ] [-s servername]

This command dynamically reloads the SCA components hosted on Tuxedo servers. The `-m`, `-g`, `-i` and `-s` options can be used to restrict the reloaded servers to any combination of machine, group, server id and server name.

**printstats** [-m machine] [-g groupname] [-i srvid] [-s servername]

This command displays the list of services hosted by a server and the associated method, number of queries, and status (`active`, `idle`). The `-m`, `-g`, `-i` and `-s` options can be used to restrict the reloaded servers to any combination of machine, group, server id and server name.

**verbose (v) [{off | on}]**

Produces output in verbose mode. If no option is given, the current setting is toggled and the new setting is printed. The initial setting is set to `off`.

**help (h) [{command | all}]**

Prints help messages. If `command` is specified, the abbreviation, arguments, and description for that command are printed. `all` causes a description of all commands to be displayed. Omitting all arguments causes the syntax of all commands to be displayed.

**echo (e) [{off | on}]**

Echoes input command lines when set to on. If no option is given, the current setting is toggled, and the new setting is printed. The initial setting is `off`.

**quit (q)**

Terminates the session

## Interoperability

The `scaadmin` command must run on an active node.

## Environment Variables

**TUXCONFIG**

Used to determine the location where the Tuxedo configuration file is loaded.

## Portability

This utility can be used on any platform that supports the Oracle SALT environment.

## Example(s)

The following command reloads all the composites hosted by the `uBikeServer` Tuxedo application server, which was built using the `buildscaserver(1)` command.

```
scaadmin
> reload -s uBikeServer
```

The following command displays statistics on the services offered by the `uBikerServer` Tuxedo application server, which was built using the `buildscaserver(1)` command.

```
scaadmin
> printstats -s uBikeServer
```

Service	Method	Status	Requests Processed
SEARCHINVENTORY	searchInventory	A	37

# SCAHOST (5)

## Name

SCAHOST - Generic server for Python, Ruby, or PHP SCA components.

## Synopsis

```
SCAHOST SRVGRP="identifier" SRVID="number"

CLOPT="[-A] [servopts options]

-- -w -c composite"
```

## Description

SCAHOST is an Oracle Tuxedo system provided server that provides boot-strapping functionality for Python, Ruby, or PHP programs hosted as SCA components.

SCAHOST relies on Oracle Tuxedo Service Metadata Repository information, and therefore requires being defined after the TMMETADATA system process in the UBBCONFIG file.

Python, Ruby, and PHP components can be hosted by a single SCAHOST. It is preferable that the component(s) hosted contain only Python, Ruby, and PHP components (i.e., no C++ components).

## Parameters and Options

**-w**  
Specifies that an SCAHOST instance exposes Web services. By default, only ATMI binding services are exposed. Webs services and ATMI bindings cannot be hosted by the same SCAHOST server, if a composite has services exposed with both bindings, two SCAHOST instances must be configured in order to expose all ATMI and Web Services bindings.

**-c composite**  
Specifies the name of the component that this server will host.

## Portability

This command is available on any platform on which the Oracle Tuxedo server environment is supported.

## Example(s)

[Listing 2](#) provides an SCAHOST example.

## Listing 2 SCAHOST Example

---

```
*SERVERS

SCAHOST      SRVGRP=GROUP1 SRVID=100
              CLOPT="-A -- -c Account "

SCAHOST      SRVGRP=GROUP2 SRVID=100
              CLOPT="-A -- -c Loan "
```

---

### See Also

[Oracle SALT SCA Programming](#), Python, Ruby, and PHP Binding in the *Oracle SALT Programming Guide*

# scapasswordtool

## Name

`scapasswordtool` – Manages passwords for Tuxedo authentication in SCA clients.

## Synopsis

```
scapasswordstore -i passwordidentifier [-a|d]
```

## Description

This command manages the `password.store` file used by SCA components to refer to Tuxedo-based services.

Passwords are prompted and encrypted. The encrypted version is stored in this file, associated with a clear-text identifier. This command is also used to delete identifier/password pairs from the file.

The password is limited to 40 characters. If standard input is not a terminal, that is, if the user cannot be prompted for a password (as with a Here file, for example), then the `APP_PW` environment variable is accessed to set the password. If the `APP_PW` environment variable is not set and standard input is not a terminal, then `scapasswordtool` prints an error message and exits.

A `password.store` file is created in the current directory if it does not previously exist.

## Parameters and Options

### **-i passwordidentifier**

Required. The identifier specified in the <binding> element. SCA components search the password for this element.

### **-[a|d]**

The **-a** option adds an identifier/password pair, whereas the **-d** option deletes it. An error message is printed out and the command processing is aborted in one of the following situations:

- If **-a** is used to add an already existing identifier
- If **-d** is used to delete a non-existing identifier

## Portability

This utility can be used on any platform that supports the Oracle SALT environment.

## See Also

[setSCAPasswordCallback\(3c\)](#)

# scastructc32, scastructc(1)

## Name

scastructc32, scastructc - Structure description compiler for Oracle SALT.

## Synopsis

```
scastructc32 [-n] [-d viewdir] structfile [structfile . . . ]
scastructc  [-n] [-d viewdir] structfile [structfile . . . ]
```

## Description

scastructc32 and scastructc are a Oracle SALT SCA structure description compiler programs. These commands take a source structure description file and produces:

- A binary file, which is interpreted at run time to effect the actual mapping of data between FML buffers and C++ structures.
- One or more header files.

**Note:** COBOL is not supported in the SCA environment, therefore scastructc32 and scastructc do not have options to generate COBOL copyfiles.

SCA structure description files are identical to Oracle Tuxedo viewfiles, with the exception that SCA structure description files allow the following extensions:

- Nested structures are supported. A nested structure may be specified by using the `struct` keyword in column 1. When this keyword is used, the "cname" value in column 2 must be the name of a previously defined view that describes a nested structure.

The value in column 3 will be interpreted as the name of the element for the inner structure within the outer structure. If the value in column 3 is "-", then the name of the inner structure element will be the same as the name of the inner structure.

As with other types, the value in column 4 can be used to specify a count of the number of times the inner structure is included in the outer structure. The "flag" and "size" values in columns 5 and 6 are not used for struct elements.

`scastructc32` is used for 32-bit FML. It uses the `FLDGTBLS32` and `FLDGTBLDIR32` environment variables. `scastructc` is used for 16-bit FML. It uses the `FLDGTBLS` and `FLDGTBLDIR` environment variables.

If none of the SCA structure file extensions are used, then binary files produced by `scastructc32` are compatible with binary files produced by `viewc32` and binary files produced by `scastructc` are compatible with binary files produced by `viewc`.

The structfile is a file containing source structure descriptions. More than one structfile can be specified on the `scastructc32` or `scastructc` command line as long as the same VIEW name is not used in more than one structfile.

By default, all views in the structfile are compiled and two or more files are created: a view object file (with a `.v` suffix) and a C header file (with a `.h` suffix). The name of the object file is `structfile.V` in the current directory unless an alternate directory is specified through the `-d` option. C header files are created in the current directory.

**Note:** `scastructc32` and `scastructc` generate a binary file with suffix `.v` on Unix and suffix `.vv` on Windows.

At `scastructc32` or `scastructc` compile time, the compiler matches each field id and field name specified in the viewfile with information obtained from the field table file, and stores mapping information in an object file for later use. Therefore, it is essential to set and export the environment variables `FLDGTBLS` and `FLDGTBLDIR` to point to the related field table file. For more information, see [Programming an Oracle Tuxedo ATMI Application Using FML](#) and [Programming an Oracle Tuxedo ATMI Application Using C](#).



If the `scastructc32` or `scastructc` compiler cannot match a field name with its field id because either the environment variables are not set properly or the field table file does not contain the field name, a warning message, Field not found, is displayed.

With the `-n` option, it is possible to create a view description file for a C structure that is not mapped to an FML buffer. Programming an Oracle Tuxedo ATMI Application Using C discusses how to create and use such an independent view description file.

## Parameters and Options

The following options are interpreted by `scastructc32` and `scastructc`:

### **-n**

Used when compiling a structure description file for a C structure that does not map to an FML buffer. It informs the structure compiler not to look for FML information.

### **-d viewdir**

Used to specify that the structure object file is to be created in a directory other than the current directory.

**Note:** On Windows, the following additional options are recognized:

### **-c { m | b }**

Specifies the C compilation system to be used. The supported value for this option is `m` for the Microsoft C compiler. The Microsoft C compiler is the default for this option. The `-c` option is supported for Windows only.

### **-1 filename**

Specifies that pass 1 should be run, and the resulting batch file called `filename.bat` should be created. After this file is created, it, should be executed before running pass 2. Using pass 1 and pass 2 increases the size of the views that can be compiled. The `-1` option is supported for Windows only.

### **-2 filename**

Specifies that pass 2 should be run to complete processing, using the output from pass 1. The `-2` option is supported for Windows only.

## Portability

The output view file is a binary file that is machine and compiler-dependent. It is not possible to generate a view on one machine with a specific compiler and use that view file on another machine type or with a compiler that generates structure offsets differently (for example, with different padding or packing).

## See Also

[scastructdis32](#), [scastructdis](#)

[Programming an Oracle Tuxedo ATMI Application Using FML](#)

[Introduction to FML Functions in Oracle Tuxedo ATMI FML Function Reference](#)

[Programming an Oracle Tuxedo ATMI Application Using C](#)

[Oracle SALT SCA Programming](#) in the *Oracle SALT Programming Guide*

# scastructdis32, scastructdis

## Name

`scastructdis32`, `scastructdis` - Disassembler for binary structure files and viewfiles.

## Synopsis

```
scastructdis32 [-E envlabel] viewobjfile [viewobjfile...]  
scastructdis [-E envlabel] viewobjfile [viewobjfile...]
```

## Description

`scastructdis32` disassembles a view object file produced by `scastructc32` or `viewc32` and displays view information in viewfile format. In addition, it displays the offsets of structure members in the associated structure.

One or more viewobjfiles (with a `.v` suffix) can be specified on the command line. By default, the viewobjfile in the current directory is disassembled. If this is not found, an error message is displayed.

Because the information in the viewobjfile was obtained from a match of each field id and field name in the viewfile with information in the field table file, it is important to set and export the environment variables `FLDDBLS32` and `FLDDBLDIR32`.

The `scastructdis32` output looks the same as the original structure description(s), and is mainly used to verify the accuracy of the compiled object structure descriptions.

`scastructdis` is used for files originally compiled with `scastructc` or `viewc`. It uses the `FLDDBLS` and `FLDDBLDIR` environment variables instead of `FLDDBLS32` and `FLDDBLDIR32`.

## See Also

[scastructc32](#), [scastructc\(1\)](#)

Programming an Oracle Tuxedo ATMI Application Using FML

Oracle SALT SCA Programming in the *Oracle SALT Programming Guide*

# scatuxgen(1)

## Name

`scatuxgen` - Generates Tuxedo Service Metadata Repository interface information from an SCA interface.

## Synopsis

```
scatuxgen (-c <composite file name> | -i <interface file name> [-I <inbuf>]
[-O <outbuf>]) -s <service name> [-t <string-type>] [-w [-n <namespace> -a
<network address>]] [-v]
```

## Description

Generates Tuxedo Service Metadata Repository interface information based on SCA abstract class definitions. Service Metadata generation is performed by parsing a composite file (in SCDL) which allows locating the interface referenced by the `<service name>` value, or directly by specifying the interface to process at the command line.

The interface is an SCA-compliant abstract class definition contained in a C++ header file. Parsing the composite file allows you to take advantage of `binding.atmi` details (for example, buffer types and xsd schemas) when available.

When `binding.atmi` information is not available, `scatuxgen` can directly process a C++ interface directly by giving the name of the header file containing it as an argument to the command line.

The generated file name is composed using the service name, input using the command-line option, and the `.mif` file, and possibly the `.wsdf` extension.

## Options

- c composite file name**  
Specifies the pathname of the composite file to be processed. This path is relative to where the command is run.
- i interface file name**  
Specifies the name of the interface file to be processed. This path is relative to where the command is run.

**-I inbuf**

Specifies the type of input Tuxedo buffer to generate in the service metadata entry. This option is only valid when used in conjunction with the `-i` and `-w` options . Acceptable values are `STRING`, `CARRAY`, `X_OCTET`, `VIEW/<viewname>`, `X_C_TYPE/<viewname>`, `X_COMMON/<viewname>`, `VIEW32/<viewname>`, `FML`, `FML32`, `MBSTRING` and `XML`.

**-O outbuf**

Specifies the type of output Tuxedo buffer to generate in the service metadata entry. This option is only valid when used in conjunction with option `-i`. Acceptable values are `STRING`, `CARRAY`, `X_OCTET`, `VIEW/<viewname>`, `X_C_TYPE/<viewname>`, `X_COMMON/<viewname>`, `VIEW32/<viewname>`, `FML`, `FML32`, `MBSTRING` and `XML`.

**-E outbuf**

Specifies the type of error Tuxedo buffer to generate in the service metadata entry. This option is only valid when used in conjunction with option `-i`. Acceptable values are `STRING`, `CARRAY`, `X_OCTET`, `VIEW/<viewname>`, `X_C_TYPE/<viewname>`, `X_COMMON/<viewname>`, `VIEW32/<viewname>`, `FML`, `FML32`, `MBSTRING` and `XML`.

**-s service name**

Specifies the name of the service to be generated when using an interface file. It also specifies the base of the output file(s).

**-t string-type**

Specifies that `scatuxgen` should map `xsd:string` types in XML schemas to Tuxedo `mbstring` (`FLD_MBSTRING`).

**-w**

Specifies `scatuxgen` produces a WSDL document.

**-n**

When producing a WSDL document, can be used to indicate the `Definition/@wsdlNameSpace` attribute value. If not specified, the `Definition/@wsdlNameSpace` attribute contains the '##NAMESPACE##' placeholder.

**-a**

When producing a WSDL document, can be used to indicate the `Definition/WSBinding/AccessingPoints/Endpoint/@address` attribute value. If not specified, the `Definition/WSBinding/AccessingPoints/Endpoint/@address` attribute will contain the '##ADDRESS##' placeholder.

**-v**

Specifies `scatuxgen` in verbose mode.

## Portability

This utility can be used on any platform that supports the Oracle SALT environment.

## Example

The following example results in a `TOUPPER.mif` file created in the same directory where `scatuxgen` is invoked:

```
$ scatuxgen -c simpapp.composite -s TOUPPER
```

## See Also

[tuxscagen\(1\)](#)

[Oracle SALT SCA Programming](#) in the *Oracle SALT Programming Guide*

# setSCAPasswordCallback(3c)

## Name

`setSCAPasswordCallback()` – Sets the callback for retrieving a password associated with an identifier in a `<binding.atmi>` element.

## Synopsis

```
#include <tuxsca.h>
void setSCAPasswordCallback(char * (_TMDLLENTY *) (*disp) (char
*identifier))
```

## Description

`setSCAPasswordCallback()` allows an SCA component to identify the callback that returns the clear-text password that is passed to the appropriate authentication code.

The function pointer passed on the call to `setSCAPasswordCallback()` must conform to the specified parameter definition. The `_TMDLLENTY` macro is required for Windows-based operating systems to obtain the proper calling conventions between the Tuxedo libraries and your code. On UNIX systems, the `_TMDLLENTY` macro is not required because it expands to the null string.

The identifier points to the password identifier passed to the callback function. The callback function then returns a `char *` that points to the actual clear-text password.

## Return Values

The `setSCAPasswordCallback()` function does not return any data.

## Errors

On failure, `setSCAPasswordCallback()` sets `tperrno` to one of the following values:

**[TPEPROTO]**

setSCAPasswordCallback() has been called in an improper context.

**[TPESYSTEM]**

An Oracle Tuxedo system error has occurred. The exact nature of the error is written to a log file.

**[TPEOS]**

An operating system error has occurred.

See Also

[scapasswordtool](#)

## tmscd(1)

Name

tmscd(1) – Activates and deactivates service contract discovery.

Synopsis

```
tmscd start|stop|status [-e] [-f <file>] [id1 [ id2 [ ...]]]
```

Description

The tmscd command line utility is used to activate and deactivate service contract discovery.

Parameters and Options

tmscd accepts following parameters and options:

**start|stop|status**

Required. Starts, stops, or displays service contract dictionary settings for specific services, or all services if none are specified. A start or stop request for a service that has already activated or deactivated contract discovery is ignored. Effective service information is displayed when handling the requests.

**Note:** start|stop|status must occur after -e and -f , if either of those options are specified.

**[-e]**

Specifies the service scope as a regular expression.

**[-f <file>]**

The service scope is defined in the given <file>. The file may contain sections to group related definitions together. All entries for a section must be written together line-by-line.

Empty lines or lines starting with '#' are ignored. Lines starting with '\*' are section lines. Other lines are "id=content" definitions.

**id1 id2 ...**

Indicates one or more services. If -e is specified, a regular expression is used to match the service name. If -e is not specified, the service name is matched exactly.

## Example(s)

Example 1 - start discovery for TOUPPER, TOLOWER:

```
tmscd start TOUPPER TOLOWER
```

Example 2 - start discovery for services started with TO and BR:

```
tmscd -e start TO.* BR.*
```

Example 3 - same request as example 1 but via file:

```
tmscd -f svcfile start id1 id2
```

**Note:** The first found definition is used if section is not provided:

Example 4 - same request as example 2 but via file:

```
tmscd -e -f svcfile start case4.svcs
```

[Listing 3](#) shows content of the file named "svcfile".

### Listing 3 svcfile Content

---

```
# file: svcfile
*case3
id1    = TOUPPER
id2    = TOLOWER

*case4
svcs   = TO.* | BR.*
```

---

## Diagnostics

tmscd fails if TMMETADATA is not booted or booted using the -r (readonly) option without the -o option.

## See Also

[TMMETADATA \(5\)](#)

[Configuring Service Contract Discovery](#) in the *Oracle SALT Administration Guide*

# tmwsdlgen

## Name

tmwsdlgen – WSDL document generator.

## Synopsis

```
tmwsdlgen -c wsdf_file [-y] [-o wsdl_file] [-m {pack|raw|mtom}] [-t  
{wls|axis}]
```

## Description

tmwsdlgen generates a WSDL document file from a Tuxedo native Web Service Definition File (WSDF). The generated WSDL document is WSDL 1.1 specification compliant, and represents both the service contracts and policies. tmwsdlgen collects Tuxedo service contract information throughout the Tuxedo Service Metadata Repository management (TMMETADATA) process.

tmwsdlgen works as a Tuxedo native client and requires the following:

- the TUXCONFIG environment variable must be set correctly
- the relevant Tuxedo application using TMMETADATA must be booted prior to executing tmwsdlgen.

**WARNING:** The given WSDF must be a Tuxedo native WSDF. *Do not* use a wsdlcvt converted non-native WSDF file as input.

tmwsdlgen accepts the following parameters:

### **-c wsdf\_file**

Mandatory. Used to specify the SALT WSDF local path.

tmwsdlgen accepts the following optional parameters:

### **-o wsdl\_file**

Used to specify the output WSDL document file path. If the option is not present, the default file, `tuxedo.wsdl`, is created in the *current directory*. If the specified WSDL document file already exists, then a prompt displays to confirm to overwriting the existing file.



- y** Overwrites the existing WSDL document file without prompting.
- m** Used to specify the WSDL data mapping policy for certain Tuxedo typed buffers. Currently, it applies to the Tuxedo CARRAY buffer type. If `raw` mode is specified, CARRAY is represented to the MIME attachment. If `pack` mode is specified, `xsd:base64Binary` is used to represent CARRAY. The default value is `pack` mode.
- Note:** `raw` mode cannot be used for .Net clients. The .Net Framework does not support MIME attachments.
- If `mtom` is specified, CARRAY is mapped to the MTOM SOAP message.
- t** This option takes effect only when the `-m` option is specified in `raw` mode. It accepts two options, `wls` or `axis`:
- `wls` indicates `tmwsdlgen` generates the WSDL document file in compliance with WebLogic 9.x. The default is `wls`.
  - `axis` indicates the WSDL document file format can be recognized by the Apache Axis toolkit.

## Deprecation

The following SALT 1.1 `tmwsdlgen` parameters are deprecated in the current release.

**-c Config\_file**

Mandatory. Used to specify the Oracle SALT Configuration File path.

**Note:** In the current SALT release, the SALT 1.1 configuration file is specified as the `tmwsdlgen` input using the following optional parameters:

**-s**

Used to specify the encoding style used for Web service SOAP messages. Specifies `rpc` for RPC/encoded style and `doc` for Doc/literal encoded style. If this option is not present or the specified value is invalid, `Doc` is the default style.

**-v**

Used to specify the SOAP protocol version that the WSDL file supports. Specify 1.1 for SOAP 1.1 protocol and 1.2 for SOAP 1.2 protocol. If this option is not present or the specified value is invalid, SOAP 1.1 is used as the default.

**Note:** In the current SALT release, the SOAP version and message style attribute are specified in the Oracle SALT WSDF.

## Diagnostics

If a syntax error is detected in the given WSDL, an “ERROR” or “FATAL” message indicating that problem is printed to the standard error, and no WSDL file is generated and `tmwsdlgen` exits with exit code 1.

A “WARN” message is printed to the console if:

1. WSDL content may result in a potential run-time risk, or
2. default values are used because they are not specified in the WSDL. “WARN” messages do not interrupt `tmwsdlgen` execution.

Upon successful completion, `tmwsdlgen` exits with exit code 0.

## Example(s)

The following command generates a WSDL document file, `Salt.wsdl`, from the specified SALT WSDL, `tux.wsdf`.

```
tmwsdlgen -c tux.wsdf -o Salt.wsdl
```

The following command generates a default WSDL document file with SOAP w/Attachment capability from the specified SALT WSDL, `app_wsdf.xml`.

```
tmwsdlgen -c app_wsdf.xml -m raw
```

## SEE ALSO

[GWWS \(5\)](#)

[wsdlcvt](#)

[Oracle SALT Web Service Definition File Reference](#)

# tuxscagen(1)

## Name

`tuxscagen` – Generates SCA, SCDL, and server-side interface files for Tuxedo services.

## Synopsis

```
tuxscagen [-s <target-root-directory>] [-d <service-name>] [-C
<TUXEDO_cltname>] [-u <TUXEDO_username>] [(-S | -j <java_package_name>)] [-o
<output_SCDL_filename>] [-i <output_interface_filename>] [-m
<max-intf-arguments>] [-y] [-v] [-F] [-c] [-h] [-g<i>i</i>a<i>s</i>]
[-trepository=<filename> | -tinfile=<metarepos.infile> | -tmetadata]
```

## Description

tuxscagen is used to generate interface and SCDL files. The interface files are used for developing the SCA component using ATMI binding, or wrap existing Tuxedo services in an SCA component. The SCDL files are assembly artifacts that help SCA run time to locate the module and services.

## Parameters and Options

tuxscagen supports the following options:

**-s target-root-directory**

Specifies the location of the root directory where the generated SCDL and interface files are located. The directory must exist and with write access permission; if it does not exist, the tool issues an error message and fails.

**-d <service-name>**

Specifies the name of Tuxedo service in the Tuxedo Metadata Repository. If this option is not specified, all services in the repository or in the input file are selected.

Abbreviation: there is no abbreviation for this option

**-C <TUXEDO\_cltname>**

The Tuxedo client name. Use `cltname` as the client name when joining the Tuxedo application.

**-u <TUXEDO\_username>**

The Tuxedo user name. Use `username` as the user name when joining the Tuxedo application. This is required when Tuxedo security level is higher than `APP_PW` and input method is to retrieve Tuxedo Service Metadata from `TUXEDO.TMMETAREPOS` Service.

**-j <java\_package\_name>**

This option generates JAVA interface files. By default, tuxscagen generates C++ header files. If `-g` is not specified but if `-j <java_package_name>` is specified then `-ga` is assumed. However, if `-g` sub-option `i` or `s` is specified, a warning message is displayed.

**-o <output\_SCDL\_filename>**

This option specifies the output SCDL filenames for single composite and single `componentType` file. If this option is not specified, then by default, one composite and one `componentType` are generated for each Tuxedo service. However, if this option is specified with the output filename, only one composite and one `componentType` file is generated for all the matching Tuxedo services. If the specified `<output_SCDL_filename>` already exists, an interactive prompt is displayed and requires user input (unless `-y` is specified). If this option is specified, `-F` is automatically implied.

**-i <output\_interface\_filename>**

This option specifies the output interface filenames for single abstract class header file and single class implementation header file. If this option is not specified, then by default, it generates one abstract interface class header file and one implementation class header file.

However, if this option is specified with output interface filename then only one abstract class header file and one implementation header file is generated for all matching Tuxedo services. If the specified <output\_interface\_filename> already exists, an interactive prompt is displayed and requires user input (unless -y is specified).

If this option is specified, -F is automatically implied.

**-m <max-intf-arguments>**

This option specifies the maximum number of arguments allowed in the interface method. If the number of arguments exceeds the specified threshold then a complex data type is used as the input argument for the interface method. The complex data type used is `commonj::sdo::DataObjectPtr`.

If -m is not specified, the default threshold is 10.

If 0 specified, it will always generate using `commonj::sdo::DataObjectPtr`.

If -ga is not specified, this option is ignored.

**-y**

This option suppresses Really overwrite files:<filename> [y, q] ? so that the script can run without user input. This question appears if either or both -o and -i are specified. If both these options are not specified, by default existing files are replaced.

**-v**

This option turns on the verbose mode.

**-h**

If this option is specified, online help is printed and all other options are ignored.

**-F**

Flat File view. If this option is specified, then all the generated files are put in the target root directory. The default is Tree File view.

**-c**

Generates client-side SCDL. By default `tuxscagen` generates server-side SCDL, specifying this option changes it to generate client-side SCDL.

**-g a|i|s**

This option is used to specify the files to generate. The sub-options can be combined. The `a` sub-option is used to generate abstract base class header files. The sub-option `i` is to generate implementation class header files. Sub-option `s` is

used to generate SCDL files. To generate both header files, specify `-gai`. To generate all files, specify `-gais`.

If not specified, `-gais` is assumed.

**`[-trepository=<filename> | -tinfile=<metarepos.infile> | -tmetadata]`**

This option specifies the processing type.

If `-trepository=<filename>` is specified, `tuxscagen` retrieves service parameter information from the Service Metadata repository file `<filename>`. If

`-tinfile=<metarepos.infile>` is specified, then `tuxscagen` retrieves service parameter information from `<metarepos.infile>`, where the `<metarepos.infile>` syntax is suitable for input to `tmloadrepos`. If `-tmetadata` is specified, `tuxscagen` retrieves service parameter information from the Tuxedo TMMETADATA server.

At most, one `-t` option can be specified; the default is `-tmetadata`.

**`[-S]`**

Specifies `tuxscagen` generate a structures for any function parameter or return value that would otherwise have been passed using `DataObjectPtr`.

When the `-S` option is used, a structure definition is generated as part of the generated abstract class header file `${TUXSERVICE}.h`. `tuxscagen -S` also generates a Tuxedo view file `${TUXSERVICE}.v` describing the generated view(s).

If `tuxscagen` input does not specify a maximum number of occurrences for a field, then `tuxscagen -S` generates 1 occurrence for that field. If `tuxscagen` input specifies an unlimited number of occurrences for a field, then `tuxscagen -S` generates an error.

If `tuxscagen` input does not specify a maximum length for a string, array, or `mbstring` parameter, then `tuxscagen` generates a maximum length of 80 characters plus trailing NULL for that parameter and outputs a warning message to check if this is sufficient.

**Note:** The use of an 80 character default is different from `viewc`. An unspecified length in `viewc` causes a length of 1 character plus trailing null to be generated, which is insufficient for most applications.

The `tuxscagen -S` option will not change the underlying Tuxedo transport type specified for the `<inputBufferType>`, `<outputBufferType>`, and `<errorBufferType>` elements in the generated composite file. When data is passed via `DataObjectPtr` or via a structure, this will normally be FML32.

**Note:** Structures are not supported for the SCA Java interface. Using `tuxscagen` with both the `-j` and `-S` options results in an error.

## Portability

This utility can be used on any platform that supports the Oracle SALT environment.

## Example

The following command is used to generate SCDL, interface, and implementation header files from a Tuxedo Metadata Repository file named `myrepository` in the current working directory. The number of interface method input arguments is limited to 8. If the limit is exceeded, the XSD schema file is still generated.

```
tuxscagen -s /home/tux/sca -Dname=TRANSFER -gais -m 8
-trepository=myrepository
```

## See Also

[`scatuxgen\(1\)`](#), [`tmloadrepos\(1\)`](#), [`tmunloadrepos\(1\)`](#)

[Managing The Tuxedo Service Metadata Repository in \*Setting up an Oracle Tuxedo Application\*](#)

[Oracle SALT SCA Programming](#) in the *Oracle SALT Programming Guide*

# WEBHNDLR (5)

## Name

WEBHNDLR - Generic Web Application server handler for PHP, Python or Ruby applications.

## Synopsis

```
WEBHNDLR SRVGRP="identifier" SRVID="number"
CLOPT="[-A] [servopts options]
      -- -l [PHP|Python|Ruby] [-V interpreter version]
      -S service name"
```

## Description

WEBHNDLR is a system process server designed to contain scripts written in PHP, Python or Ruby, and work in conjunction with the `mod_tuxedo` (Apache 2 module) or `tux_nsapi` (iPlanet Web Server) plugin.

PHP scripts can be used as is, without any code modification. Python and Ruby scripts must be written in CGI mode as follows.

- Python scripts must be written following the WSGI (Web Server Gateway Interface) specification. For more information, see [Web Application Server Programming](#) in the Oracle SALT Programming Guide.
- Ruby scripts must be written using a Ruby rack approach. For more information, see [Web Application Server Programming](#) in the Oracle SALT Programming Guide.

WEBHNDLR supports the following options:

**-l [PHP | Python | Ruby]**

Specifies which language interpreter to initialize for this Web Application handler. PHP selects the PHP handler, Python selects the Python handler and Ruby selects the Ruby handler.

**-v interpreter version**

Optional. Specifies which *version* of the language interpreter to initialize for this Web Application handler. Supported values are (default in bold):

PHP: **5**

Python: **2.5**

Ruby: **1.9**

**-s service name**

Specifies which Tuxedo service needs to be advertised for this handler. This service name must match the `TuxService` parameter value configured in `mod_tuxedo`.

## Environment Variable(s)

**APP\_CONFIG (Python only)**

Mandatory. Specifies a Python WSGI-compliant application as an environment variable value. This variable may be set in the environment prior to starting the server, or using an environment file (`ENVFILE`).

The application can be a stand-alone WSGI function in a module, or a middleware-wrapped class (for example, `WSGIHandler` for a Django application). To specify a stand-alone application, the following format is used:

```
APP_CONFIG="application-name.function-name"
```

To specify a middleware-wrapper application, the following format is used:

```
APP_CONFIG="wrapper.class.full.name.Handler (application-name)"
```

For example, a stand-alone non-wrapped application is configured as follows (the path to the script must be added to the `PYTHONPATH` environment variable, or the script must be placed in a `PYTHONPATH` location):

```
APP_CONFIG=test_app
```

A wrapped application is configured (using Django for example) as follows:

```
APP_CONFIG="django.core.handlers.wsgi (WSGIHandler)"
```

### **APP\_CONFIG (Ruby only)**

Mandatory. Specifies a Ruby rack-compliant application as an environment variable value. This variable may be set in the environment prior to starting the server, or using an environment file (ENVFILE).

The application is a rackup script. For more information on rackup see the Ruby Rack documentation. The format of this application string is as follows:

```
APP_CONFIG=<location of rack-up script>
```

For example, the Rack Lobster web example can be configured as follows (assuming Ruby is installed in /usr/lib/ruby):

```
APP_CONFIG=/usr/lib/ruby/gems/1.9.2/gems/rack-1.2.1/example/lobster.ru
```

For more information, see [Developing Python and Ruby Web Applications](#), Web Application Server Programming in the Oracle SALT Programming Guide.

## Portability

This command is available on any platform on which the Oracle Tuxedo server environment is supported.

## Example(s)

```
*SERVERS
WEBHNDLR    SRVGRP=GROUP1 SRVID=100
            CLOPT="-A -- -l PHP -S PHP_SVC"
```

# wsadmin

## Name

wsadmin – Oracle SALT administration command interpreter.

## Synopsis

```
wsadmin [-v]
```



## Description

wsadmin uses specific commands to monitor and administrate active GWWS processes in the specified Tuxedo domain. The TUXCONFIG environment variable is used to determine the location where the Tuxedo configuration file is loaded. wsadmin is used in the same manner as tmadmin(1) or dmadmin(1).

wsadmin accepts below optional parameter:

**-v**

Causes wsadmin to display the Oracle SALT version number, SALT Patch Level and license information. wsadmin exits after print out.

## wsadmin Commands

Commands may be entered using either their full name or their abbreviation (as given in parentheses), followed by any appropriate arguments. Arguments appearing in brackets [ ], are optional; arguments in braces, {}, indicate a selection from mutually exclusive options.

**Note:** Command line options that are not in brackets do not need to appear in the command line if the corresponding default has been set via the default command.

wsadmin supports the following commands:

**configstats(cstat) -i gwws\_instance\_id**

Displays the current configuration status for the specified GWWS process. The -i parameter must be specified.

**default(d) [-i gwws\_instance\_id]**

Sets the corresponding argument to the default GWWS Instance ID. The defaults can be changed by specifying \* as an argument. If the default command is entered without arguments, the current defaults are printed.

**echo(e) [{off | on}]**

Repeats input command lines when set to on. If no option is given, the current setting is toggled, and the new setting is printed. The initial setting is off.

**forgettrans (ft) -i gateway\_instance\_id [-c Coord\_context]**

Forgets one or all heuristic log records for the named GWWS instance. If the transaction identifier tran\_id or coord\_context coordination context is specified, only the heuristic log record for that transaction is forgotten. The coordination context (coord\_context) can be obtained from the printtrans command or from the ULOG file.

**help (h) [command]**

Prints help messages. If command is specified, the abbreviation, arguments, and description for that command are printed.

Omitting all arguments causes the syntax of all commands to be displayed.

**gwstats(gws) -i gwws\_instance\_id [-s serviceName]**

Displays global level run time statistics information for the specified GWS processes including fail, success, pending number for both inbound and outbound call, average processing time, active thread number, etc. If -s serviceName specified, the service-level information is displayed.

-i is mandatory. -s is optional.

**paginate(page) [{off | on}]**

Paginates output. If no option is given, the current setting is toggled, and the new setting is printed. The initial setting is on, unless either standard input or standard output is a non-tty device. Pagination may be turned on only when both standard input and standard output are tty devices.

The default paging command is indigenous to the native operating system environment. In a UNIX operating system environment, for example, the default paging command is `pg`. The shell environment variable `PAGER` may be used to override the default command used for paging output.

**printtrans (pt) -i gateway\_instance\_id**

Prints transaction information for the named GWS instance. The output for each transaction record contains the following colon-delimited string fields:

```
process ID:GWS instance id:service name:local GTRID:remote
coordination context ID:record type:timestamp.
```

**quit (q)**

Terminates the session.

**verbose (v) [{off | on}]**

Produces output in verbose mode. If no option is given, the current setting is toggled, and the new setting is printed. The initial setting is off.

**! shellcommand**

Escapes to the shell and executes shell command.

**!!**

Repeats previous shell command.

**# [text]**

Specifies comments. Lines beginning with # are ignored.

**<CR>**

Repeats the last command.

## Example(s)

1. The following command inspects run time statistics for both inbound and outbound service on GW2:

```
wsadmin
> gws -i GW2
GWWS Instance : GW2

Inboud Statistics :
-----
Request Response Succ :    3359
Request Response Fail :         0
      Oneway Succ :         0
      Oneway Fail :         0

      Total Succ :    3359
      Total Fail :         0

Avg. Processing Time : 192.746 (ms)
-----

Outboud Statistics :
-----
Request Response Succ :    4129
Request Response Fail :         0
      Oneway Succ :         0
      Oneway Fail :         0

      Total Succ :    4129
      Total Fail :         0

Avg. Processing Time : 546.497 (ms)
-----

      Total request Pending :    36
Outbound request Pending :         0
```

```
Active Thread Number :    141
```

2. The following command inspects run time statistics for the `ToUpperWS` service on `GW1` and gets output in verbose mode.

```
wsadmin
> > verbose
Verbose now on.
> gws -i GW1 -s ToUpperWS
GWWS Instance : GW1

Service : ToUpperWS

Outbound Statistics :

-----
Oneway Succ :      0
Oneway Fail :      0
-----

Avg. Processing Time :  0.000 (ms)
```

See Also

[GWWS\(5\)](#)

[Oracle SALT Administration Guide](#)

## wsdlcvt

Name

`wsdlcvt` – WSDL document converter.

Synopsis

```
wsdlcvt -i WSDL_URL -o output_basename [-m] [-v] [-y] [-w] [-sh] [-sp]
```

Description

`wsdlcvt` is used to convert an existing WSDL 1.1 document to a Metadata Input File, FML32 mapping File and Oracle SALT Web Service Definition File (WSDF). It is a wrapper script for `wsdl2mif.xml`, `wsdl2fml32*.xml` and `wsdl2wsdf.xml` for Xalan. Apache Xalan 2.7 libraries are bundled with Oracle SALT product.

JRE 1.5 or higher is required to run `wsdlcvt`.

## Parameters

`wsdlcvt` accepts the following parameters:

- i**  
Specifies the URL of the input WSDL document. The URL can be a local file path or a downloadable HTTP URL link.
- o**  
Specifies the output files basename. The following suffixes are appended after the basename:

**Table 4 wsdlcvt-Created File Suffixes**

Suffix	Output File
.mif	Tuxedo Service Metadata Input File
.fml32	FML32 Field Table Definition File
.wsdf	SALT Web Service Definition File
.xsd	The WSDL Document embedded XML Schema File

`wsdlcvt` accepts the following optional parameters:

- y**  
Specifies that all the output destination files are overwritten without prompting if they exist. If this parameter is not specified, a prompt message is output.
- m**  
Specifies that the “`xsd:string`” data type is mapped to an FML32 typed buffer Tuxedo `FLD_MBSTRING` data type. If this parameter is not specified, Tuxedo `FLD_STRING` data type is mapped by default.
- v**  
Specifies that `wsdlcvt` works in verbose mode. In particular, it shows context information in the message and output context as FML32 field comments.
- w**  
If the given WSDL document is published using Microsoft .NET WCF, and it includes the `wsdl:import` tag, this parameter is specified to ensure that it is correctly handled by `wsdlcvt`.

**-sh**

Specifies the SOCKS proxy host name to use when a network connection needs to be established (for instance to download the WSDL document from a remote host). This can be a hostname or an IP address. If the proxy name is incorrect and a connection can not be established, wsdlcvt will attempt to connect directly.

**-sp**

Specifies the SOCKS proxy host port number to use if necessary in conjunction with the -sh option. The default value is 1080.

## Environment Variable(s)

The `TUXDIR` and `LANG` environment variables must be set correctly.

The `PATH` environment variable must be set appropriately to execute “java”.

## Diagnostics

Error, warning or information messages are output to standard output.

## Example(s)

The following command converts the local WSDL file, `sample.wsdl`.

```
wsdlcvt -i sample.wsdl -o sample
```

The following command converts a WSDL document from a HTTP URL link. The “`xsd:string`” data type is mapped to the Tuxedo `FLD_MBSTRING` field type.

```
wsdlcvt -i http://api.google.com/GoogleSearch.wsdl -o GSearch -m
```

## See Also

[Creating The Tuxedo Service Metadata Repository](#)

[field\\_tables\(5\)](#)

[Oracle SALT Web Service Definition File Reference](#)

# wsloadcf

## Name

**wsloadcf** – Reads SALT Deployment file and other referenced artifacts. Loads a binary `SALTCONFIG` file.

## Synopsis

```
Usage 1: wsloadcf [-n][-y][-D loglevel] saltdeploy_file
Usage 2: wsloadcf [-n][-y][-D loglevel] -1 [-s rpc|doc]
        [-v 1.1|1.2] salt_1.1_config
```

## Description

`wsloadcf` reads a SALT deployment file and other referenced files (WSDF files, WS-Policy files), checks the syntax, and optionally loads a binary `SALTCONFIG` file. The `SALTCONFIG` environment variable points to the `SALTCONFIG` file where the information should be stored. The generated `SALTCONFIG` file is necessary to boot GWS servers.

`wsloadcf` accepts the following optional parameters:

- n**  
Do validation only *without* generating the `SALTCONFIG` file.
- y**  
After checking the syntax, `wsloadcf` checks whether: (a) the file referenced by `SALTCONFIG` exists; (b) it is a valid Oracle Tuxedo system file system; and (c) it contains `SALTCONFIG` tables. If these conditions are not true, `wsloadcf` prompts you to indicate whether you want the command to create and initialize `SALTCONFIG`.  
Initialize `SALTCONFIG` file: path [y, q]?  
Prompting is suppressed if the `-y` option is specified on the command line.
- D**  
Used to specify the configuration parsing log level.  
  
For SALT 1.1 backward compatibility, `wsloadcf` can also read a SALT 1.1 configuration file. Besides generating the `SALTCONFIG` binary file, `wsloadcf` also generates one SALT Web Service Definition File (WSDF) and one SALT Deployment file according to the given SALT 1.1 configuration file.
- 1**  
Turns on the SALT 1.1 compatible mode. To pass the SALT 1.1 configuration file to `wsloadcf`, you must specify this flag first.
- v**  
Only takes effect when a SALT 1.1 configuration file is used. This option is used to specify which SOAP version is applied to the generated WSDF file.
- s**  
Only takes effect when a SALT 1.1 configuration file is used. This option is used to specify which SOAP message style is applied to the generated WSDF file.

## Environment Variables

The `SALTCONFIG` environment variable must be set before executing `wsloadcf`.

## Diagnostics

If a syntax error is detected in the given configuration files, an “ERROR” or “FATAL” message indicating that problem is printed to the console, and no information is updated in the `SALTCONFIG` file. `wsloadcf` exits with exit code 1.

A “WARN” message is printed to the console if: (1) configuration files may result in a potential run-time risk or (2) default values are used because they are not specified in the configuration files. “WARN” messages do not interrupt `wsloadcf` execution.

Upon successful completion, `wsloadcf` exits with exit code 0. If the `SALTCONFIG` file is updated, a userlog message is generated.

## See Also

[Oracle SALT Web Service Definition File Reference](#)

[Oracle SALT Deployment File Reference](#)



# Oracle SALT Web Service Definition File Reference

The following sections provide SALT Web Service Definition File (WSDL) reference information:

- [Overview](#)
- [Oracle SALT WSDL Format](#)
- [XML Schema](#)
- [Oracle SALT WSDL Examples](#)
- [Oracle SALT WSDL Element Descriptions](#)

## Overview

The Oracle SALT Web Service Definition File (WSDL) is an XML-based file used to define Oracle SALT Web service components (for example, Web Service Bindings, Web Service Operations, Web Service Policies, and so on). WSDL is a SALT specific representation of the Web Service Definition Language data model. There are two WSDL types:

- Native WSDL (Tuxedo generated)

A native WSDL is composed manually. You must define a set of Tuxedo services and how they are exposed as Web services in a native WSDL. The native WSDL is similar to the SALT 1.1 configuration file.

**Note:** A native WSDL is the input file used by the SALT WSDL generator (tmwsdlgen).

- Non-native WSDL (Externally generated)

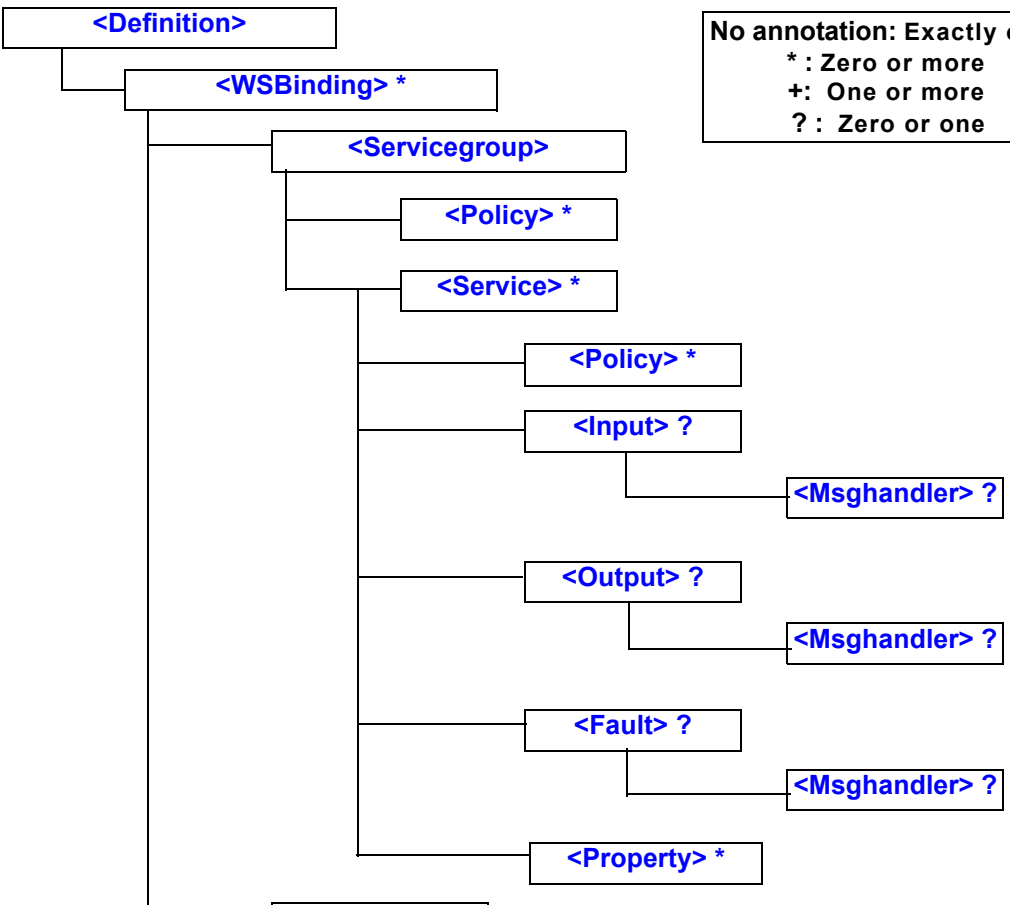
A non-native WSDL is generated from an external WSDL file via the SALT WSDL converter (`wsdlcvt`). In most cases, you do not need to change the generated WSDL except for configuring advanced features.

For more information, see `tmwsdlgen` and `wsdlcvt` in the *Oracle SALT Command Reference*.

# Oracle SALT WSDL Format

Figure A-1 shows a graphical representation of the WSDL format.

Figure A-1 SALT Web Service Definition File Format



# XML Schema

An XML Schema is associated with the WSDL. The XML Schema file that describes the WSDL format is located in the following directory: \$TUXDIR/udataobj/salt/wsdfl.xsd.

## Oracle SALT WSDL Examples

[Listing A-1](#) and [Listing A-2](#) show native and non-native WSDL examples.

### Listing A-1 Native WSDL (Composed Manually)

---

```
<Definition name="bankapp"
  xmlns=http://www.bea.com/Tuxedo/WSDL/2007 >
  <WSBinding id="bankapp_binding" >
    <Servicegroup id="bankapp">
      <Policy location="/home/user/rm.xml" />
      <Service name="inquiry" />
      <Service name="deposit" />
    </Servicegroup>
    <SOAP>
      <AccessingPoints>
        <Endpoint id="HTTP1" address="http://myhost:7001" />
        <Endpoint id="HTTPS1" address="https://myhost:7002/bankapp" />
      </AccessingPoints>
    </SOAP>
  </WSBinding >
</Definition>
```

---

### Listing A-2 Non-Native WSDL (Generated from an External WSDL Document)

---

```
<Definition name="myWebservice"
  wsdlNamespace="http://www.example.org/myWebservice"
  xmlns=http://www.bea.com/Tuxedo/WSDL/2007 >
  <WSBinding id="A_binding">
    <Servicegroup id="portType">
      <Service name="operation_1" soapAction="opl" />
    </Servicegroup>
  </WSBinding>
</Definition>
```

```
<Service name="operation_2" soapAction="op2" />
</Servicegroup>
<SOAP version="1.1" style="rpc" use="encoded">
  <AccessingPoints>
    <Endpoint id="example_http_port"
      address="http://www.example.org/abc" />
    <Endpoint id="example_https_port"
      address="https://www.example.org/abcssl" />
  </AccessingPoints>
</SOAP>
</WSBinding>
<WSBinding id="B_binding">
  <Servicegroup id="portType">
    <Service name="operation_3" soapAction="op3" />
    <Service name="operation_4" soapAction="op4" />
  </Servicegroup>
  <SOAP version="1.2">
    <AccessingPoints>
      <Endpoint id="another_http_port"
        address="http://www.example.org/def" />
    </AccessingPoints>
  </SOAP>
</WSBinding>
</Definition>
```

---

## Oracle SALT WSDF Element Descriptions

WSDF format elements and their attributes are listed and described in the following section.

### <Definition>

The WSDF file root element.

**Table A-1 <Definition> Attributes**

Attribute	Description	Required
name	<p>The WSDL name. This attribute value may contain a maximum of 30 characters (excluding the terminating NULL character).</p> <p>Native WSDL: you must manually provide a distinct application name.</p> <p>Non-native WSDL: this value is the same as the WSDL converter (<a href="#">wsdlevt</a>) command line input parameter “output_basename.”</p>	Yes
wsdlNamespace	<p>The corresponding WSDL document target namespace for the WSDL.</p> <p>Native WSDL: you can optionally specify a distinct URI string so that the generated WSDL can use this as the target namespace. If not specified, the default WSDL target namespace is as follows: “urn:&lt;wsdf_name&gt;.wsdl”. For example, if the WSDL name is “<i>simpapp</i>”, then the default WSDL target namespace is “<i>urn:simpapp.wsdl</i>”.</p> <p>Non-native WSDL: the value is the WSDL target namespace of the external WSDL document.</p>	No

## <WSBinding>

Defines concrete protocol binding information. Zero or more WSBinding objects can be specified in one WSDL file.

Native WSDL: you can set SOAP version, encoding style, several endpoints for Web Service Client connection through sub element [<SOAP>](#) and a set of Tuxedo services to be exposed for invocation through sub element [<Servicegroup>](#).

Non-native WSDL: each SOAP binding object (i.e., `wsdl:binding` object with `soap:binding` extension) in the external WSDL document is translated into one WSBinding object.

**Table A-2 <WSBinding> Attributes**

Attribute	Description	Required
id	<p>Identifies the WSBinding object. The value must be unique within the WSDL. This attribute value may contain a maximum of 78 characters (excluding the terminating NULL character).</p> <p>Native WSDL: the value is specified by customers and is used as the <code>wsdl:binding</code> name in the generated WSDL document.</p> <p>Non-native WSDL: the value is the <code>wsdl:binding</code> name defined in the external WSDL document.</p>	Yes

## <Servicegroup>

Defines a Servicegroup object for one WSBinding object. Each WSBinding object must have exactly one Servicegroup. The Servicegroup object is used to encapsulate a set of Tuxedo services.

**Table A-3 <Servicegroup> Attributes**

Attribute	Description	Required
id	<p>Specifies the service group id. This attribute value may contain a maximum of 78 characters (excluding the terminating NULL character).</p> <p>Native WSDL: the value is specified by customers and is used as the <code>wsdl:portType</code> name in the generated WSDL document.</p> <p>Non-native WSDL: the value is the <code>wsdl:portType</code> name defined in the external WSDL document.</p>	Yes

## <Service>

Specifies a service for the WSBinding object.

Native WSDL: each service is a Tuxedo service.

Non-native WSDL: each service represents a converted Tuxedo service from a `wsdl:operation` object defined in the external WSDL document.

Table A-4 &lt;Service&gt; Attributes

Attribute	Description	Required
name	<p>Specifies the service name. This attribute value may contain a maximum of 255 characters (excluding the terminating NULL character).</p> <p>Native WSDL: the service name value is used as the <code>wsdl:operation</code> name in the generated WSDL document.</p> <p>Non-native WSDL: the service name is equal to the <code>wsdl:operation</code> name defined in the external WSDL document.</p>	Yes
tuxedoRef	<p>An optional attribute used to reference the service definition in the Tuxedo Service Metadata Repository.</p> <p>If not specified, attribute "name" value is used as the reference value.</p>	No
soapAction	<p>Specifies the service soapAction attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the soapAction setting for each <code>wsdl:operation</code> defined in the external WSDL document.</p> <p><b>Note:</b> Do not specify this attribute for a native WSDL.</p>	No
namespace	<p>Specifies service namespace attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the namespace setting for each <code>wsdl:operation</code> defined in the external WSDL document.</p> <p><b>Note:</b> Do not specify this attribute for a native WSDL.</p>	No

## <Input>

Specifies Input message attributes for a particular service. This element is optional.

**Table A-5 <Input> Attributes**

Attribute	Description	Required
name	Specifies the service input message name attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the name for the input <code>wsdl:message</code> defined in the external WSDL document.  <b>Note:</b> Do not specify this attribute for a native WSDL.	No
wsaAction	Specifies the service input message wsaAction attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the wsaAction attribute of the input <code>wsdl:message</code> defined in the external WSDL document.  <b>Note:</b> Do not specify this attribute for a native WSDL.	No

## <Output>

Specifies Output message attributes for a particular service. This element is optional.

**Table A-6 <Output> Attributes**

Attribute	Description	Required
name	Specifies the service output message name attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the name for the output <code>wsdl:message</code> defined in the external WSDL document.  <b>Note:</b> Do not specify this attribute for a native WSDL.	No
wsaAction	Specifies the service output message name attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the wsaAction attribute of the output <code>wsdl:message</code> defined in the external WSDL document.  <b>Note:</b> Do not specify this attribute for a native WSDL.	No

## <Fault>

Specifies Fault message attributes for a particular service. This element is optional.



**Table A-7** <Fault> Attributes

Attribute	Description	Required
name	Specifies the service fault message name attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the name for the fault <code>wsdl:message</code> defined in the external WSDL document.  <b>Note:</b> Do not specify this attribute for a native WSDL.	No
wsaAction	Specifies the service fault message wsaAction attribute. This is a <i>non-native</i> WSDL attribute. It is used to save the wsaAction attribute of the fault <code>wsdl:message</code> defined in the external WSDL document.  <b>Note:</b> Do not specify this attribute for a native WSDL.	No

## <Msghandler>

Specifies a customized message conversion handler. Optional for <Input>, <Output> and/or <Fault> elements of any service. The value of this element is the handler name, which may contain a maximum of 30 characters (excluding the terminating NULL character).

The GWWS server looks for the message conversion handler from all known message conversion plug-in shared libraries using the handler name. The message conversion handler allows you to develop customized Tuxedo buffer and SOAP message payload transformation functions to replace the default GWWS message conversions.

For more information, see “[Programming Message Conversion Plug-ins](#) in the *Oracle SALT Programming Web Services*.

## <Policy>

References one Web Service Policy file applied to one of the following two levels:

- <Servicegroup> level
- <Service> level

At most, 10 Web Service policies can be referenced for each object.

**Table A-8 <Policy> Attributes**

Attribute	Description	Required
location	<p>Specifies the local file path for the referenced WS-Policy file. This attribute value may contain a maximum of 256 characters (excluding the terminating NULL character).</p> <p>Specifically, Oracle SALT pre-defines WS-Policy template files for typical WS-* scenarios. These files can be found under the \$TUXDIR/udataobj/salt/policy directory. You can reference these template files using the string format “salt:&lt;template_file_name&gt;”.</p> <p>For example, if you want to reference SALT WS-SecurityPolicy 1.0 template file “wssp1.0-signbody.xml”, you should define the following XML snippet in the WSDL file:</p> <pre>&lt;Policy location="salt:wssp1.0-signbody.xml" /&gt;</pre>	Yes
use	<p>Specifies if the WS-Policy file is applied to the input message, output message, fault message, or the combination of the three. If multiple messages are set, use a space as the delimiter.</p> <p>For example, if you want to configure a WS-Policy file “mypolicy.xml” to be applied to “input” and “output” messages, you should define the following XML snippet in the WSDL file:</p> <pre>&lt;Policy location="mypolicy.xml" use="input output"/&gt;</pre> <p>Oracle SALT limits the applicable messages for each supported WS-Policy assertion.</p> <p>For more information, see the following sections:</p> <ul style="list-style-type: none"> <li>• <a href="#">“Configuring Advanced Web Service Messaging Features”</a> in the <i>Oracle SALT Administration Guide</i></li> <li>• <a href="#">“Configuring Message-Level Web Service Security”</a> in the <i>Oracle SALT Administration Guide</i></li> <li>• <a href="#">Oracle SALT WS-ReliableMessaging Policy Assertion Reference</a></li> <li>• <a href="#">Oracle SALT WS-SecurityPolicy Assertion 1.2 Reference</a></li> <li>• <a href="#">Oracle SALT WS-SecurityPolicy Assertion 1.0 Reference</a></li> </ul>	No

## <Property>

Specifies SALT specific properties for each service object.

**Table A-9 <Property> Attributes**

Attribute	Description	Required
name	Specifies the property name. <a href="#">Table A-10</a> lists all the GWWS server properties.	Yes
value	Specifies the property value.	Yes

The following table lists all properties that can be specified for each service object.

**Table A-10 <Property> Name List**

Property	Description	Values
async_timeout	Outbound service: Specifies a time setting to wait for SOAP response. Inbound service: No behavior impact.	(0-32767] (sec) Default: 60 secs.
disableWSAddressing	Outbound service: Disables explicit Web Service Addressing requests with this property. Inbound service: No behavior impact.	{True False} Default: False

## <SOAP>

Specifies SOAP protocol information for the WSBinding object. SOAP version, message style accessing endpoints are specified in this element.

**Table A-11 <SOAP> Attributes**

Attribute	Description	Required
version	Specifies SOAP version for this WSBinding object. The valid values are "1.1" and "1.2". If not specified, "1.1" is used.	No

**Table A-11 <SOAP> Attributes**

Attribute	Description	Required
style	Specifies SOAP message style for this WSBinding object. The valid values are “rpc” and “document”. If not specified, "document" is used.	No
use	Specifies SOAP message encoding style for this WSBinding object. The valid values are “encoded” and “literal”.  If not specified explicitly, this value is automatically selected according to “style” value. If “style” is “rpc”, then “encoded” is used; if “style” is “document”, then “literal” is used.	No

**Note:** In the current SALT release, only “rpc/encoded” and “document/literal” are supported.

## <AccessingPoints>

Specifies the endpoint list for the WSBinding object. Each sub element [<Endpoint>](#) represents one particular endpoint.

There is no attribute for this element.

## <Endpoint>

Specifies each accessing endpoint for the WSBinding object.

**Table A-12 <Endpoint> Attributes**

Attribute	Description	Required
id	Specifies a unique endpoint id value within the WSBinding object. This attribute value may contain a maximum of 78 characters (excluding the terminating NULL character).	Yes
address	Specifies the endpoint address. The address value must use the following format:  "http(s)://<host>:<port>/<context_path>"  <b>Note:</b> Two endpoints cannot be specified with exact the same address URL value.	Yes

## <Realm>

Specifies the HTTP Realm attribute of an HTTP and/or HTTP/S endpoint. If this element is configured for one endpoint, the GWWS tries to incorporate HTTP basic authentication information in the request messages when issuing outbound calls through this endpoint.

For more information, see “[Configuring Transport Level Security](#)” in the *Oracle SALT Administration Guide*.

**Note:** This element only works for non-native (external) WSDL files.



# Oracle SALT Deployment File Reference

The following sections provide SALT Deployment File reference information:

- [Overview](#)
- [Oracle SALT SALTDEPLOY Format](#)
- [XML Schema](#)
- [Oracle SALT SALTDEPLOY Example](#)
- [Oracle SALT SALTDEPLOY Element Description](#)

## Overview

The Oracle SALT Deployment File (SALTDEPLOY) is an XML-based file used to define Oracle SALT `GWWS` server deployment information on a per Tuxedo machine basis. SALTDEPLOY does the following:

- lists all necessary Web Service Definition Files (WSDF)
- specifies how many `GWWS` servers are deployed on a Tuxedo machine
- associates inbound and outbound Web Service access endpoints for each `GWWS` server.

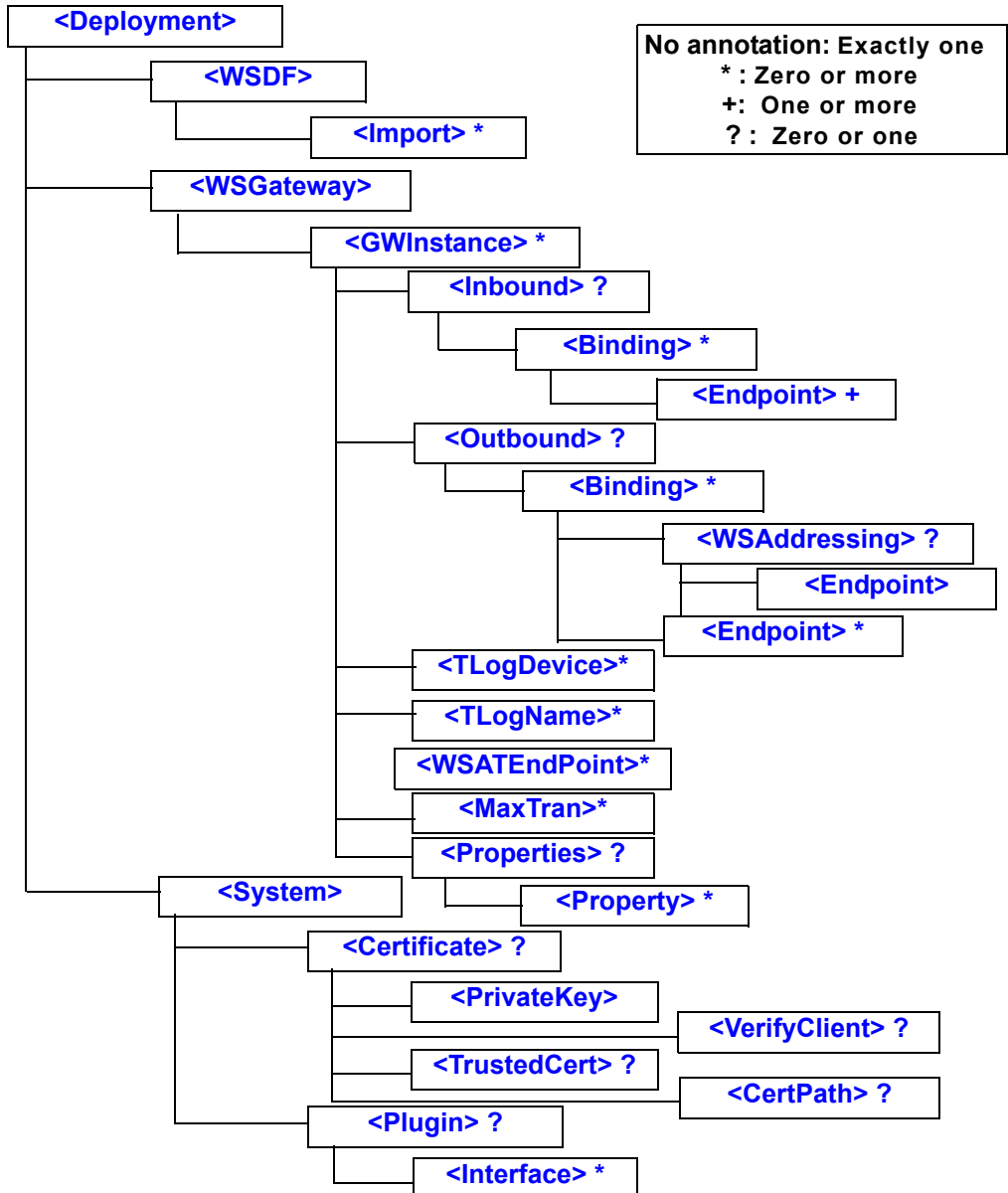
SALTDEPLOY also provides a system section to configure global resources (for example certificates, plug-in load libraries, and so on).

## Oracle SALT SALTDEPLOY Format

[Figure B-1](#) shows a graphical representation of the Oracle SALT SALTDEPLOY format.



Figure B-1 SALT Deployment File Format



## XML Schema

An XML Schema is associated with an Oracle SALT Deployment File. The XML Schema file that describes the Oracle SALT Deployment File format is located in the following directory:

\$TUXDIR/udataobj/salt/saltdep.xsd.

## Oracle SALT SALTDEPLOY Example

[Listing B-1](#) shows a sample SALT Deployment File.

### Listing B-1 SALT Deployment File Example

---

```
<Deployment xmlns="http://www.bea.com/Tuxedo/SALTDEPLOY/2007">
  <WSDF>
    <Import location="/home/myapp/bankapp.wsdf" />
    <Import location="/home/myapp/amazon.wsdf" />
  </WSDF>
  <WSGateway>
    <GWInstance id="GW1">
      <Inbound>
        <Binding ref="bankapp:bankapp_binding">
          <Endpoint use="http1" />
          <Endpoint use="https1" />
        </Binding>
      </Inbound>
      <Outbound>
        <Binding ref="amazon:default_binding" />
      </Outbound>
      <Properties>
        <Property
```

```

        name="socksAddrList"

        value="proxy.server.com,10.123.10.10:1080"/>
    </Properties>
</GWInstance>
</WSGateway>
<System>
    <Certificate>
        <PrivateKey>/home/user/cert.pem</PrivateKey>
    </Certificate>
    <Plugin>
        <Interface library="/home/user/mydatahandler.so" />
    </Plugin>
</System>
</Deployment>

```

---

## Oracle SALT SALTDEPLOY Element Description

SALTDEPLOYF format elements and their attributes are listed and described in the following section.

### <Deployment>

The SALTDEPLOY file root element.

There is no attribute for this element.

Three sections must be defined within the <Deployment> element:

- <WSDF> elements
- <WSGateway> element
- <System> element.

There can be only one <Deployment> element defined in a SALTDEPLOY file.

## <WSDF>

Top element that encapsulates all imported WSDF files.

There is no attribute for this element.

## <Import>

Specifies the `WSDF` to be imported in the `SALTDEPLOY` file. Multiple `WSDF` can be imported at the same time. Each `WSDF` file can only be imported once. Multiple `WSDF` with the same `WSDF` name cannot be imported in the same `SALTDEPLOY` file.

**Table B-1 <Import> Attributes**

Attribute	Description	Required
<code>location</code>	Specifies the <code>WSDF</code> local file path.	Yes

## <WSGateway>

Top element that encapsulates all `GWWS` instance definitions.

There is no attribute for this element.

## <GWInstance>

Specifies a single `GWWS` instance.

**Table B-2 <GWInstance> Attributes**

Attribute	Description	Required
<code>id</code>	Specifies the <code>GWWS</code> identifier. This attribute value may contain a maximum of 12 characters (excluding the terminating NULL character). The identifier value must be unique within the <code>SALTDEPLOY</code> file.	Yes

## <Inbound>

Specifies inbound `WSBinding` objects for the `GWWS` server. Each inbound `WSBinding` object is specified using the [<Binding>](#) sub element.

There is no attribute for this element.

## <Outbound>

Specifies outbound WSBinding objects for the GWWS server. Each outbound WSBinding object is specified using the [<Binding>](#) sub element.

There is no attribute for this element.

## <Binding>

Specifies a concrete WSBinding object as either an inbound or outbound binding, depending on the parent element.

**Table B-3 <Binding> Attributes**

Attribute	Description	Required
ref	Specifies a concrete WSBinding object using the following Qualified Name format: “<WSDF_name>:<WSBinding_id>”	Yes

**Note:** Please note the following maximum WSBinding object limitations for each GWWS server:

- Each GWWS server may reference at most 64 inbound WSBinding objects.
- Each GWWS server may reference at most 128 outbound WSBinding objects.

For TCP/IP addresses, one of the following formats is used as shown in [Table B-4](#).

**Table B-4 Ipv4 and IPv6 Address Formats**

IPv4	IPv6
//IP:port	//[IPv6 address]:port
//hostname:port_number	//hostname:port_number
//#. #. #. #:port_number	Hex format is not supported

For more information, see TMUSEIPV6 in the TUXENV (5) environment variable listing found in the *Tuxedo 10g R3 Reference Guide, Section 5 - File Formats, Data Descriptions, MIBs, and System Processes Reference*.

## <Endpoint>

Specifies a single WSBinding objects endpoint reference.

If the referenced endpoint is specified as an inbound endpoint, the GWWS server creates the corresponding HTTP and/or HTTPS listen endpoint. At least one inbound endpoint must be specified for one inbound WSBinding object.

If the referenced endpoint is specified as an outbound endpoint, the GWWS server creates HTTP and/or HTTPS connections per SOAP requests for the outbound WSBinding object.

If an outbound endpoint is not specified for the outbound WSBinding object, the first 10 endpoints (at most) are auto-selected.

The referenced endpoint must already be defined in the WSDF.

**Table B-5 <Endpoint> Attributes**

Attribute	Description	Required
use	The referenced endpoint id defined in the WSDF.	Yes

**Note:** Please note the following maximum endpoints limitations for each GWWS server:

- Each GWWS server may create at most 128 inbound endpoints in all inbound WSBinding objects to accept SOAP requests.
- Each GWWS server may create connectivity with at most 256 outbound endpoints in all outbound WSBinding objects.

## <WSAddressing>

Specifies if Web Service Addressing is enabled for the outbound WSBinding object.

If this element is present, by default all SOAP messages are sent out with a Web Service Addressing message header. The sub element [<Endpoint>](#) must be specified for the listen endpoint address if this element is present.

There is no attribute for this element.

## <Endpoint>

Specifies the WS-Addressing listen endpoint address for the referenced outbound WSBinding object.

**Table B-6 <Endpoint> Attributes**

Attribute	Description	Required
address	<p>Specifies the WS-Addressing listen endpoint address.</p> <p>The address value must be in the following format:</p> <p>"http(s) : //&lt;host&gt; : &lt;port&gt; /&lt;context_path&gt;"</p> <p>The GWWS server creates listen endpoints and usage for receiving WS-Addressing SOAP response messages.</p>	Yes

**<TLogDevice>**

One attribute "location" describes the location of the Transaction file. This is required if WS-TX transaction support is required.

**<TLogName>**

One attribute "id" describes the name of the transaction log inside a Transaction file. This is required if WS-TX transaction support is required.

**<WSATEndpoint>**

One attribute "address" describes the WS-AT protocol end point.

**<MaxTran>**

One attribute "value" describes the maximum number of concurrent WS-TX transactions allowed. This is bounded by Oracle Tuxedo `MAXGTT`.

**<Properties>**

Top element that encapsulates all `GWWS` server property settings using the [<Property>](#) sub element.

**Table B-7 <Properties> Attributes**

Attribute	Description	Required
<code>socksAddrList</code>	<p>If necessary, endpoints can be grouped by GWInstance to achieve separation between proxy-using endpoints and non-proxy-using ones.</p> <p><b>Value:</b> String type containing a list of proxy server URLs.</p> <p>For example: <code>proxy.server1.com,10.123.1.1:1080</code>.</p>	Yes

**<Property>**

Specifies one GWWS property.

**Table B-8 <Property> Attributes**

Attribute	Description	Required
<code>name</code>	Specifies the property name. <a href="#">Table B-9</a> lists all the GWWS server properties.	Yes
<code>value</code>	Specifies the property value.	Yes



Table B-9 GWWS &lt;Property&gt; List

Property	Description	Values
max_content_length	<p>Enables the GWWS server to deny the HTTP requests when the content length is larger than the property setting. If not specified, the GWWS server does not check for it. The string value can be one of the following three formats:</p> <ol style="list-style-type: none"> <li>1. Integer number in bytes. No suffix means the unit is bytes.</li> <li>2. Float number in kilobytes. The suffix must be 'K'. For instance, 10.4K, 40K, etc.</li> <li>3. Float number in megabytes. The suffix must be 'M'. For instance, 100M, 20.6M, etc.</li> </ol>	<p>The equivalent byte size value must be in [1 byte, 1G byte] range.</p>
thread_pool_size	<p>Specifies the maximum thread pool size for the GWWS server.</p> <p><b>Note:</b> This value defines the maximum possible threads that may be spawned in the GWWS server. When the GWWS server is running, the actual spawned threads may be less than this value.</p>	<p>The valid value is in [1, 1024].</p> <p>Default value: 16</p>
timeout	<p>Specifies the network time-out value, in seconds.</p>	<p>The valid value is in [1, 65535].</p> <p>Default value: 300</p>
max_backlog	<p>Specifies the backlog listen socket value. It controls the maximum queue length of pending connections by operating system.</p> <p><b>Note:</b> Generally no tuning is needed for this value.</p>	<p>The valid value is [1-255].</p> <p>Default value: 16</p>

**Table B-9 GWWS <Property> List**

Property	Description	Values
enableMultiEncoding	Toggles on/off multiple encoding message support for the GWWS server. If multiple encoding support property is turned off, only UTF-8 HTTP / SOAP messages can be accepted by the GWWS server.	The valid values are "true", "false". Default value: false
enableSOAPValidation	Toggles on/off XML Schema validation for inbound SOAP request messages if the corresponding Tuxedo input buffer is associated with a customized XML Schema.	The valid values are "true", "false". Default value: false

## <System>

Specifies global settings, including certificate information, plug-in interfaces.

## <Certificate>

Specifies global certificate information using sub elements [<PrivateKey>](#), [<VerifyClient>](#), [<TrustedCert>](#) and [<CertPath>](#).

There is no attribute for this element.

## <PrivateKey>

Specifies the PEM format private key file. The key file path is specified as the text value for this element. The server certificate is also stored in this private key file. The value of this element may contain a maximum of 256 characters (excluding the terminating NULL character).

This element is mandatory if the parent [<Certificate>](#) element is configured.

## <VerifyClient>

Specifies if Web service clients are required to send a certificate via HTTP over SSL connections. The valid element values are "true" and "false".

This element is optional. If not specified, the default value is "false".

**<TrustedCert>**

Specifies the file name of the trusted PEM format certificate files. The value of this element may contain a maximum of 256 characters (excluding the terminating NULL character).

This element is optional.

**<CertPath>**

Specifies the local directory where the trusted certificates are located. The value of this element may contain a maximum of 256 characters (excluding the terminating NULL character).

This element is optional.

**Note:** If [<VerifyClient>](#) is set to “true”, or if WS-Addressing is used with SSL, trusted certificates must be stored in the directory setting with this element.

**<Plugin>**

Specifies the global plug-in load library information. Each [<Interface>](#) sub element specifies one plug-in library to be loaded.

There is no attribute for this element.

**<Interface>**

Specifies one particular plug-in interface or a plug-in library for all plug-in interfaces inside the library.

**Table B-10 <Interface> Attributes**

Attribute	Description	Required
library	Mandatory. Specifies a local shared library file path. This attribute value may contain a maximum of 256 characters (excluding the terminating NULL character).	Yes
params	Optional. Specifies a particular string value that is passed to the library when initialized by the GWS server at boot time. This attribute value may contain a maximum of 256 characters (excluding the terminating NULL character).	No

**Note:** For more information about how to develop a SALT plug-in interface, see “[Using Oracle SALT Plug-ins](#)” in the *Oracle SALT Programming Web Services*.



# Oracle SALT WS-ReliableMessaging Policy Assertion Reference

The following sections provide SALT WS-ReliableMessaging (WS-RM) Policy Assertion reference information:

- [Overview](#)
- [WS-RM Policy Assertion Format](#)
- [WS-RM Assertion File Example](#)
- [WS-RM Assertion Element Description](#)

## Overview

Oracle SALT provides support for WS-ReliableMessaging (WS-ReliableMessaging 1.0, Feb., 2005 specification), which allows two Web Service applications running on different GWWS instances to communicate reliably in the event of software component, system, or networks failure.

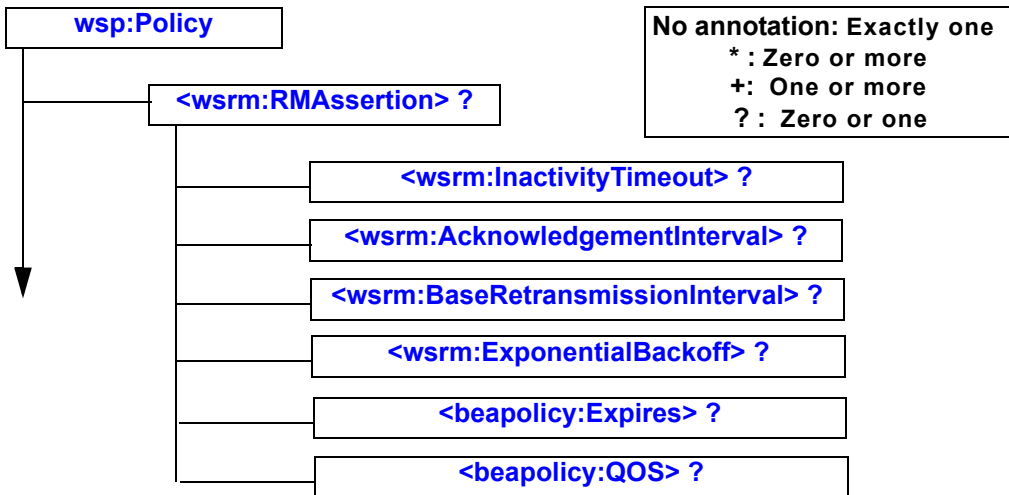
A WS-Policy file containing WS-ReliableMessaging Policy Assertion is used to configure the reliable messaging capabilities of a GWWS server on a destination endpoint. SALT supports the WS-ReliableMessaging Policy Assertion specification to ensure the interoperability with Oracle WebLogic 9.x / 10.

For more information about configuring a reliable GWWS server, see “[Configuring Advanced Web Service Messaging Features](#)” in the *Oracle SALT Administration Guide*.

## WS-RM Policy Assertion Format

Figure C-1 shows a graphical representation of the WS-ReliableMessaging Policy Assertion format in a WS-Policy file.

Figure C-1 WS-ReliableMessaging Policy Assertion Format



## WS-RM Assertion File Example

Listing C-1 shows a sample WS-Policy file that contains WS-RM policy assertion.

Listing C-1 Sample WS-ReliableMessaging Policy Assertion File

```

<?xml version="1.0"?>
<wsp:Policy wsp:Name="ReliableSomeServicePolicy"
  xmlns:wsrm="http://schemas.xmlsoap.org/ws/2005/02/rm"
  xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
  xmlns:beapolicy="http://www.bea.com/wsrm/policy">
  <wsrm:RMAssertion>
    <wsrm:InactivityTimeout Milliseconds="600000" />
    <wsrm:BaseRetransmissionInterval Milliseconds="500"/>
  
```

```

<wsrm:ExponentialBackoff />
<wsrm:AcknowledgementInterval Milliseconds="2000" />
<beapolicy:Expires Expires="P1D" />
<beapolicy:QOS QOS="ExactlyOnce InOrder" />
</wsrm:RMAssertion>
</wsp:Policy>

```

---

## WS-RM Assertion Element Description

All RM assertions are optional, and if not specified, the default value are used. The following definitions describe the RM assertion options.

### <wsrm:InactivityTimeout>

Specifies the number of milliseconds, specified with the `Milliseconds` attribute, which defines an inactivity interval. After time has elapsed, if the destination endpoint has not received a message from the source endpoint, the destination endpoint may terminate current sequence due to inactivity. The source endpoint can also use this parameter.

Sequences never time out by default.

### <wsrm:AcknowledgementInterval>

Specifies the maximum interval, in milliseconds, in which the destination endpoint must transmit a stand-alone acknowledgement.

This element is optional. If this element is not specified, There is no time limit by default.

### <wsrm:BaseRetransmissionInterval>

Specifies the interval, in milliseconds, that the source endpoint waits after transmitting a message and before it retransmits the message if it receives no acknowledgment for that message. This value will apply to the GWS server when it sends a response in an outbound sequence.

The default value is 20000 milliseconds.

## **<wsrm:ExponentialBackoff>**

Specifies that the retransmission interval is adjusted using the exponential back off algorithm. This value applies to the GWWS server when it sends a response in an outbound sequence.

## **<beapolicy:Expires>**

Specifies the amount of time after which the reliable Web service expires and does not accept any new sequence messages.

This element has a single attribute, Expires, whose data type is an XML Schema duration type. For example, if you want to set the expiration time to one day, use the following:

```
< beapolicy:Expires Expires="P1D" />
```

The default value is never expire.

## **<beapolicy:QOS>**

Specifies the delivery assurance. SALT supports the following assurances:

- AtMostOnce - Messages are delivered at most once, without duplication. There is possibility that some messages may not be delivered.
- AtLeastOnce - Every message is delivered at least once. There is possibility that some messages are delivered more than once.
- ExactlyOnce - Each message is delivered exactly once, without duplication.
- InOrder - Messages are delivered in the order that they were sent. This delivery assurance can be combined with one of the preceding three assurances.

The default value is "ExactlyOnce InOrder".

## **<wsrm:RMAssertion>**

Main WS-RM assertion that groups all the other assertions under a single element.

The presence of this assertion in a WS-Policy file indicates that the corresponding Web Service application must be invoked reliably.



# Oracle SALT WS-AT Assertion Reference

The following sections provide Oracle SALT WS-AT Assertion reference information:

- [Overview](#)
- [Policy File Example](#)

## Overview

WS-AT defines a policy assertion that allows requests to indicate whether an operation call *must* or *may* be made as part of an Atomic Transaction. For the configuration impact of Atomic Transaction policy assertions, see the "Configuration Changes" chapter.

Depending on the direction of the calls and meaning of the policy assertion setting, the runtime inbound/outbound transaction behavior is as follows:

- Inbound Transactions

For inbound transactions, there are no particular runtime behavior changes. The client consuming the WSDL accepts transactions based on the configured value. Runtime behavior is normal.

- Outbound Transactions

- If an `ATAssertion` element without "Optional=true" is configured for a service, the call has to be made in a transaction. If no corresponding XA transaction exists at the time, the WS-TX transaction is initiated (but not associated with any Oracle Tuxedo XA transactions). If an XA transaction exists, there is no change in behavior.

- If an `ATAssertion` element with `Optional=true` is configured for a service, an outbound transaction context is requested *only* if a corresponding Oracle Tuxedo XA transaction exists in the context of the call.
- If no `ATAssertion` element is configured for a service, the corresponding service call is made outside of any transaction. When a call is made to an external Web Service in the context of an Oracle Tuxedo XA transaction, the Web Service call does not propagate the transaction. This allows excluding certain Web Service calls from a global transaction, and represents the default for most existing Web Services calls that do not support WS-TX.

## Policy File Example

The existing policy file mechanism includes the addition of WS-AT policy elements. WS-AT defines the `ATAssertion` element, with an `Optional` attribute, as follows:

```
/wsat:ATAssertion/@wsp:Optional="true"
```

[Listing D-1](#) shows an example `policy.xml` file with an `ATAssertion` element.

### Listing D-1 policy.xml File with an ATAssertion Element

---

```
<?xml version="1.0"?>

<wsp:Policy wsp:Name="TransactionalServicePolicy"

  xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"

  xmlns:wsat="http://docs.oasis-open.org/ws-tx/wsat/2006/06">

  <wsat:ATAssertion wsp:Optional="true"/>

</wsp:Policy>
```

---

# Oracle SALT WS-SecurityPolicy Assertion 1.2 Reference

The following sections provide SALT WSSP1.2 reference information:

- [Overview](#)
- [Oracle SALT WSSP 1.2 Policy File Example](#)
- [Oracle SALT WSSP 1.2 Policy Templates](#)
- [Oracle SALT WSSP1.2 Assertion Description](#)

## Overview

Oracle SALT implements part of WS-Security protocol version 1.1 for inbound services. Authentication with UsernameToken and X509v3Token are supported. To describe how the authentication is carried out, WS-SecurityPolicy is used in WSDL definition.

In order to communicate with Oracle WebLogic Release 10 via WS-Security 1.1, SALT implements the counterparts of WS-SecurityPolicy (WSSP) 1.2 supported by WebLogic 10. But the supported WSSP 1.2 assertions are limited as follows:

- Protection Assertions
  - Integrity Assertion
    - [<sp:SignedParts>](#) Assertion (Limited support)
- Token Assertions:
  - [<sp:UsernameToken>](#) Assertion (Limited support)

- [<sp:X509Token>](#) Assertion (Limited support)
- Security Binding Assertions:
  - AsymmetricBinding Assertion (Limited support)
  - [<sp:TransportBinding>](#) Assertion (Limited support)
- Supporting Tokens Assertions:
  - SupportingTokens Assertion (Limited support)

For more details about limitations of WS-SecurityPolicy 1.2 assertions, please refer to [Oracle SALT WSSP1.2 Assertion Description](#).

For more information about WSSP 1.2 assertions supported by WebLogic 10, please refer to [“Using WS-SecurityPolicy 1.2 Policy Files in the Oracle WebLogic Web Services Documentation](#).

In this document, XML namespace prefix “sp” stands for namespace URI “<http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200512>”.

## Oracle SALT WSSP 1.2 Policy File Example

[Listing E-1](#) demonstrates how to apply Username token authentication with WSSP 1.2 assertions.

### Listing E-1 WSSP 1.2 Policy File Sample

---

```
<!--Binding Policy -->
<wsp:Policy
  xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
  xmlns:sp="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200512">
  <sp:TransportBinding>
    <wsp:Policy>
      <sp:TransportToken>
        <wsp:Policy>
          <sp:HttpToken/>
        </wsp:Policy>
      </sp:TransportToken>
      <sp:AlgorithmSuite>
        <wsp:Policy>
          <sp:Basic256/>
        </wsp:Policy>
      </sp:AlgorithmSuite>
    </wsp:Policy>
  </sp:TransportBinding>
</wsp:Policy>
```

```

        </wsp:Policy>
    </sp:AlgorithmSuite>
    <sp:Layout>
        <wsp:Policy>
            <sp:Lax/>
        </wsp:Policy>
    </sp:Layout>
    <sp:IncludeTimestamp/>
</wsp:Policy>
</sp:TransportBinding>
<sp:SupportingTokens>
    <wsp:Policy>
        <sp:UsernameToken
            sp:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200512/IncludeToken/AlwaysToRecipient">
            <wsp:Policy>
                <sp:WssUsernameToken10/>
            </wsp:Policy>
        </sp:UsernameToken>
    </wsp:Policy>
</sp:SupportingTokens>
</wsp:Policy>

```

---

## Oracle SALT WSSP 1.2 Policy Templates

Oracle SALT provides a number of WS-SecurityPolicy 1.2 template files you can use for most typical Web Service applications. These policy files are located in directory TUXDIR/udataobj/salt/policy.

**Table E-1 Oracle SALT WSSP 1.2 Policy Template Files**

Policy File	Description
wssp1.2-UsernameToken-plain-auth.xml	Username token with plain text password is sent in the request for authentication.
wssp1.2-x509v3-auth.xml	X509 V3 binary token (certificate) is sent in the request for authentication. The request is optionally signed with some message parts in the requests.
wssp1.2-signbody.xml	The entire SOAP body is signed.

These template files can be referenced directly in the WSDL files with location value format:

```
salt:<template_file_name>
```

For example, if you want to configure signbody, you can specify the followings in your WSDL file:

```
<Policy location="salt:wssp1.2-signbody.xml" />
```

## Oracle SALT WSSP1.2 Assertion Description

Below are all Oracle SALT supported WSSP 1.2 assertions and limitations for each one.

Customers should obey the limitation when writing their own customized WSSP 1.2 policy files. Oracle SALT does not check any customized WSSP 1.2 policy file against the limitation rules. If something claimed in the customized WSSP 1.2 policy file cannot be supported by Oracle SALT, web service client program may result run time errors.

WS-SecurityPolicy 1.2 assertions not listed below are definitely not supported by Oracle SALT.

### <sp:SignedParts>

Specifies the parts of a SOAP message to be digitally signed. Oracle SALT only supports the entire SOAP body to be signed.

### Limitations

- Child element <sp:Body> is supported for configuring the entire SOAP body to be signed.
- Child element <sp:Header> is not yet supported.

- No nesting WSSP 1.2 assertion for this assertion.

## <sp:UsernameToken>

Specifies username token to be included in the SOAP message. Oracle SALT only supports username token with clear text password defined in WS-Security Username Token Profile 1.0. <UsernameToken> assertion must be used as a nested assertion of Security Binding Assertions and Supporting Token Assertions.

### Limitations

- Supported Nesting Assertions
  - <sp:WssUsernameToken10>
- Not yet supported Nesting Assertions
  - <sp:WssUsernameToken11>
  - <sp:NoPassword>
  - <sp:HashPassword>

## <sp:X509Token>

Specifies a binary security token carrying an X509 token to be included in the SOAP message. <X509Token> assertion must be used as a nested assertion of Security Binding Assertions and Supporting Token Assertions.

### Limitations

- Supported Nesting Assertions
  - <sp:WssX509V3Token10>
  - <sp:WssX509V3Token11>
- Non-Supported Nesting Assertions
  - <sp:WssX509Pkcs7Token10>
  - <sp:WssX509Pkcs7Token11>
  - <sp:WssX509PkiPathV1Token10>
  - <sp:WssX509PkiPathV1Token11>

- <sp:WssX509V1Token10>
- <sp:WssX509V1Token11>

## <sp:AlgorithmSuite>

Specifies the algorithm suite to be used for performing cryptographic operations with security tokens. <AlgorithmSuite> Assertion must be used as a nested assertion of Security Binding Assertions.

### Limitations

- Supported Nesting Algorithm Suite
  - <sp:Basic256>
- Non-Supported Nesting Algorithm Suites
  - All the other Algorithm Suite listed in the WS-Security Policy 1.2 specification.

## <sp:Layout>

Specifies the layout rules when adding items to the security header. <Layout> Assertion must be used as a nested assertion of Security Binding Assertions.

### Limitations

- Supported Nesting Layout rules
  - <sp:Lax>
- Non-Supported Nesting Layout rules
  - <sp:Strict>
  - <sp:LaxTimestampFirst>
  - <sp:LaxTimestampLast>

## <sp:TransportBinding >

Specifies the message protection and security correlation is provided using the means of the transport. The <TransportBinding> token is used mainly for carrying isolated Username Token in the SOAP message.



## Limitations

- Supported Nesting Assertions
  - `<sp:TransportToken>`
  - `<sp:AlgorithmSuite>`
  - `<sp:Layout>`
  - `<sp:IncludeTimestamp>`
- Nesting Assertion `<sp:TransportToken>` only supports `<sp:HttpToken>`

[Listing E-2](#) shows an Oracle SALT supported TransportToken Assertion example.

### Listing E-2 Supported TransportToken Assertions

---

```
<sp:TransportBinding>
  <wsp:Policy>
    <sp:TransportToken>
      <wsp:Policy>
        <sp:HttpToken />
      </wsp:Policy>
    </sp:TransportToken>
    <sp:Algorithm>
      <wsp:Policy>
        <sp:Basic256>
      </wsp:Policy>
    </sp:Algorithm>
  </wsp:Policy>
</sp:TransportBinding>
```

---

## `<sp:AsymmetricBinding>`

Specifies the message protection is provided by means defined in WS-Security SOAP Message Security, and the request and response message can use distinct keys for encryption and signature, because of their different lifecycles. The `<AsymmetricBinding>` Assertion is used mainly for carrying X.509 binary security token in the SOAP request messages for inbound calls.

## Limitations

- Supported Nesting Assertions
  - <sp:InitiatorToken>
  - <sp:RecipientToken>
  - <sp:AlgorithmSuite>
  - <sp:Layout>
  - <sp:IncludeTimestamp>
  - <sp:ProtectTokens>
  - <sp:OnlySignEntireHeadersAndBody>
- Non-supported Nesting Assertions
  - <sp:InitiatorSignatureToken>
  - <sp:InitiatorEncryptToken>
  - <sp:RecipientSignatureToken>
  - <sp:RecipientEncryptToken>
  - <sp:EncryptBeforeSigning>
  - <sp:EncryptSignature>
- <sp:InitiatorToken> must be associated with <sp:X509Token> and the Token inclusion type must be “AlwaysToRecipient”
- <sp:RecipientToken> must be associated with <sp:X509Token> and the Token inclusion type must be “Never”

[Listing E-3](#) shows an Oracle SALT supported AsymmetricBinding assertion example. This assertion indicates the X.509 V3 binary token that defined in WS-Security X.509 Token Profile 1.1 specification is used for digital signature for the SOAP request messages and the X.509 token is always included in the SOAP message security header:

### Listing E-3 Supported AsymmetricBinding Assertion

---

```
<sp:AsymmetricBinding>
  <wsp:Policy>
    <sp:InitiatorToken>
```

```

    <wsp:Policy>
      <sp:X509Token
        sp:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-security/200512/IncludeToken/AlwaysToRecipient">
        <wsp:Policy>
          <sp:WssX509V3Token11 />
        </wsp:Policy>
      </sp:X509Token>
    </wsp:Policy>
  </sp:InitiatorToken>
  <sp:RecipientToken>
    <wsp:Policy>
      <sp:X509Token
        sp:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-security/200512/IncludeToken/Never">
        <wsp:Policy>
          <sp:WssX509V3Token11 />
        </wsp:Policy>
      </sp:X509Token>
    </wsp:Policy>
  </sp:RecipientToken>
  <sp:Algorithm>
    <wsp:Policy>
      <sp:Basic256>
    </wsp:Policy>
  </sp:Algorithm>
  <sp:Layout>
    <wsp:Policy>
      <sp:Lax>
    </wsp:Policy>
  </sp:Layout>
  <sp:IncludeTimestamp />
</wsp:Policy>
</sp:AsymmetricBinding>

```

---

## <sp:SupportingToken>

Specifies security tokens that are included in the security header and may optionally include additional message parts to sign and/or encrypt. For Oracle SALT, <SupportingToken> Assertion is used mainly to include Username Token in the security header when <sp:AsymmetricBinding> Assertion is used.

### Limitations

- Supported Nesting Assertions
  - <sp:UsernameToken>
  - <sp:X509Token>
- Not-non Supported Nesting Assertions
  - <sp:SignedParts>
  - <sp:SignedElements>
  - <sp:EncryptedParts>
  - <sp:EncryptedElements>
- All supported token assertions must be defined with Token inclusion type “AlwaysToRecipient”.

[Listing E-4](#) shows an Oracle SALT supported SupportingToken assertion example. This assertion indicates the Username token is always included in SOAP request messages:

#### Listing E-4 Supported SupportingToken Assertion

---

```
<sp:SupportingTokens>
  <wsp:Policy>
    <sp:UsernameToken
      sp:IncludeToken="http://docs.oasis-open.org/ws-sx/ws-securitypolicy/200512/IncludeToken/AlwaysToRecipient">
      <wsp:Policy>
        <sp:WssUsernameToken10/>
      </wsp:Policy>
    </sp:UsernameToken>
```

```
</wsp:Policy>  
</sp:SupportingTokens>
```

---



# Oracle SALT WS-SecurityPolicy Assertion 1.0 Reference

The following sections provide SALT WS-SecurityPolicy (WSSP) 1.0 assertion reference information:

- [Overview](#)
- [SALT WSSP 1.0 Policy Assertion Format](#)
- [SALT WSSP 1.0 Assertion File Example](#)
- [SALT WSSP 1.0 Policy Templates](#)
- [SALT WSSP 1.0 Assertion Element Description](#)

## Overview

Oracle SALT implements part of WS-Security protocol version 1.0 for inbound services. Authentication with UsernameToken and X509v3Token are supported. WS-SecurityPolicy 1.0 assertions are used in WSDL definition to describe how the authentication is carried out. The WS-SecurityPolicy1.0 specification (2002) is supported in order to ensure the interoperability with Oracle WebLogic 9.x.

Below are all Oracle SALT supported WS-SecurityPolicy 1.0 assertions:

- SecurityToken Assertions:
  - UsernameToken Assertion and X509Token Assertion
- Integrity Assertion

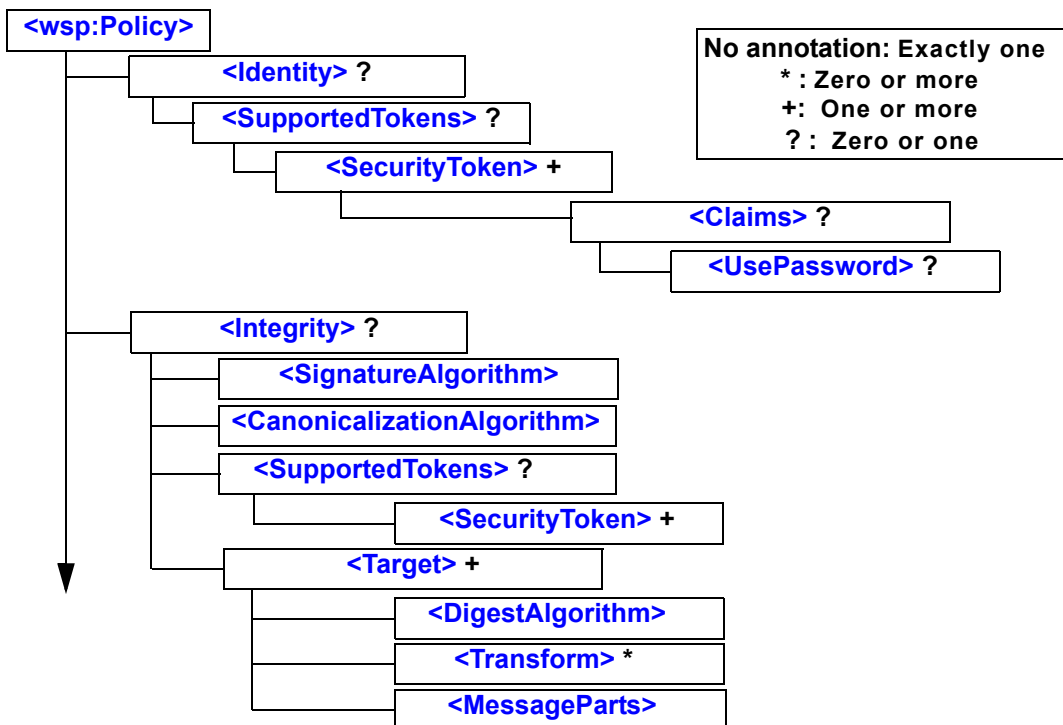
- Identity Assertion

There are some extension assertions used in WebLogic 9.x, SALT only implements a subset of them. Integrity Assertion is only used when using X509v3 token for authentication. And the only message part can be specified for signature is the whole SOAP Body.

## SALT WSSP 1.0 Policy Assertion Format

Figure F-1 shows a graphical representation of the Oracle SALT supported WS-SecurityPolicy 1.0 Assertion format in a WS-Policy file.

Figure F-1 SALT Supported WS-SecurityPolicy 1.0 Assertion Format





# SALT WSSP 1.0 Assertion File Example

[Listing F-1](#) demonstrates how to apply Username token authentication with WSSP 1.0 Assertions.

## Listing F-1 WSSP 1.0 Policy File Sample

---

```
<wsp:Policy xmlns:wsp="http://schemas.xmlsoap.org/ws/2004/09/policy"
  xmlns:wssp="http://www.bea.com/WLS/security/policy"
  xmlns:wsu="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-wssec
  urity-utility-1.0.xsd">
  <wssp:Identity>
    <wssp:SupportedTokens>
      <wssp:SecurityToken
        TokenType="http://docs.oasis-open.org/wss/2004/01/oasis-200401
        -wss-username-token-profile-1.0#UsernameToken">
          <wssp:Claims>
            <wssp:UsePassword>http://docs.oasis-open.org/wss/2004/01/oasis-2
            00401-wss-username-token-profile-1.0#PasswordText</wssp:UsePassword>
          </wssp:Claims>
        </wssp:SecurityToken>
      </wssp:SupportedTokens>
    </wssp:Identity>
  </wsp:Policy>
```

---

## SALT WSSP 1.0 Policy Templates

Oracle SALT provides a number of WS-SecurityPolicy 1.0 template files you can use for most typical Web Service applications. These policy files are located in directory TUXDIR/udataobj/salt/policy.

**Table F-1 SALT WSSP 1.0 Policy Template Files**

Policy File	Description
wssp1.0-UsernameToken-plain-auth.xml	Username token with plain text password is sent in the request for authentication.
wssp1.0-x509v3-auth.xml	X509 V3 binary token (certificate) is sent in the request for authentication. The request is optionally signed with some message parts in the requests.
wssp1.0-signbody.xml	The whole SOAP body is signed.

These template files can be referenced directly in the WSDF files with location value format:

```
salt:<template_file_name>
```

For instance, if you want to configure signbody, you can specify the followings in your WSDF file:

```
<Policy location="salt:wssp1.0-signbody.xml" />
```

## SALT WSSP 1.0 Assertion Element Description

Oracle SALT implements part of WebLogic 9.x / 10 WS-SecurityPolicy 1.0 assertions. For a complete list of WSSP 1.0 assertions supported by WebLogic, see [http://edocs.bea.com/wls/docs100/webserv\\_ref/sec\\_assert.html](http://edocs.bea.com/wls/docs100/webserv_ref/sec_assert.html)

### <CanonicalizationAlgorithm>

Specifies the algorithm used to canonicalize the SOAP message elements that are digitally signed.

**Table F-2 <CanonicalizationAlgorithm> Attribute**

Attribute	Description	Required?
URI	The algorithm used to canonicalize the SOAP message being signed.  SALT supports only the following canonicalization algorithm: <a href="http://www.w3.org/TR/xml-exc-c14n/">http://www.w3.org/TR/xml-exc-c14n/</a>	Yes

## <Claims>

Specifies additional metadata information that is associated with a particular type of security token. Depending on the type of security token, you must specify the following child elements:

- For username tokens, you must specify a [<UsePassword>](#) child element to specify what kind of the password will be used for in username authentication.

This element does not have any attributes.

## <DigestAlgorithm>

Specifies the digest algorithm that is used when digitally signing the specified parts of a SOAP message. Use the [<MessageParts>](#) sibling element to specify the parts of the SOAP message you want to digitally sign.

**Table F-3 <DigestAlgorithm> Attributes**

Attribute	Description	Required?
URI	<p>The digest algorithm that is used when digitally signing the specified parts of a SOAP message.</p> <p>SALT supports only the following digest algorithm:</p> <p><code>http://www.w3.org/2000/09/xmlsig#sha1</code></p>	Yes

## <Identity>

Specifies the type of security tokens (username or X.509) that are supported for authentication.

This element has no attributes.

## <Integrity>

Specifies that part or all of the SOAP message must be digitally signed, as well as the algorithms and keys that are used to sign the SOAP message.

For example, a Web Service may require that the entire body of the SOAP message must be digitally signed and only algorithms using SHA1 and an RSA key are accepted.

**Table F-4 <Integrity> Attributes**

Attribute	Description	Required?
SignToken	<p>Specifies whether the security token, specified using the <a href="#">&lt;SecurityToken&gt;</a> child element of <a href="#">&lt;Integrity&gt;</a>, should also be digitally signed, in addition to the specified parts of the SOAP message.</p> <p>The valid values for this attribute are true and false. The default values is true.</p>	No

## <MessageParts>

Specifies the parts of the SOAP message that should be signed. SALT only supports certain pre-defined message part function, `wsp:Body()`, i.e. the entire SOAP body to be digitally signed.

The MessageParts assertion is always a child of a [<Target>](#) assertion. The [<Target>](#) assertion can be a child of an Integrity assertion (to specify how the SOAP message is digitally signed).

See [?\\$paratext>?](#) for more information about how to specify the parts of the SOAP message that should be signed.

**Table F-5 <MessageParts> Attributes**

Attribute	Description	Required?
Dialect	<p>Identifies the dialect used to identity the parts of the SOAP message that should be signed.</p> <p>SALT only supports the following value:</p> <ul style="list-style-type: none"> <li><code>http://schemas.xmlsoap.org/2002/12/wsse#part</code> Convenience dialect used to specify parts of SOAP message that should be signed.</li> </ul>	Yes

## <SecurityToken>

Specifies the security token that is supported for authentication or digital signatures, depending on the parent element.

If this element is defined in the [<Identity>](#) parent element, then it specifies that a client application, when invoking the Web Service, must attach a security token to the SOAP request.

For example, a Web Service might require that the client application present a Username token for the Web Service to be able to access Tuxedo service. If this element is part of [<Integrity>](#), then it specifies the token used for digital signature.

The specific type of the security token is determined by the value of its TokenType attribute, as well as its parent element.

**Table F-6 <SecurityToken> Attributes**

Attribute	Description	Required?
IncludeInMessage	<p>Specifies whether to include the token in the SOAP message.</p> <p>Valid values are true or false.</p> <p>The default value of this attribute is true when used in the <a href="#">&lt;Integrity&gt;</a> assertion.</p> <p>The value of this attribute is always true when used in the <a href="#">&lt;Identity&gt;</a> assertion, even if you explicitly set it to false.</p>	No
TokenType	<p>Specifies the type of security token. Valid values are:</p> <ul style="list-style-type: none"> <li><a href="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-1.0#X509v3">http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-x509-token-profile-1.0#X509v3</a> (To specify a binary X.509 v3 token)</li> <li><a href="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#UsernameToken">http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#UsernameToken</a> (To specify a username token)</li> </ul>	Yes

## <SignatureAlgorithm>

Specifies the cryptographic algorithm used to compute the digital signature.

**Table F-7 <SignatureAlgorithm> Attributes**

Attribute	Description	Required?
URI	<p>Specifies the cryptographic algorithm used to compute the signature.</p> <p><b>Note:</b> Be sure that you specify an algorithm that is compatible with the certificates you are using in your enterprise.</p> <p>Valid values are:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.w3.org/2000/09/xmldsig#rsa-sha1">http://www.w3.org/2000/09/xmldsig#rsa-sha1</a></li> <li>• <a href="http://www.w3.org/2000/09/xmldsig#dsa-sha1">http://www.w3.org/2000/09/xmldsig#dsa-sha1</a></li> </ul>	Yes

## <SupportedTokens>

Specifies the list of supported security tokens that can be used for authentication, or digital signatures, depending on the parent element.

This element has no attributes.

## <Target>

Encapsulates information about which targets of a SOAP message are to be signed. When used in [<Integrity>](#), you can specify the [<DigestAlgorithm>](#), [<Transform>](#), and [<MessageParts>](#) child elements.

Ideally, you can have one or more targets. But at most one target is enough for SALT, since SALT only supports the entire SOAP body to be configured for digital signature.

This element has no attributes.

## <Transform>

Specifies the URI of a transformation algorithm that is applied to the parts of the SOAP message that are signed. Only can exist in a child element of the [<Integrity>](#) element.

You can specify zero or more transforms, which are executed in the order they appear in the [<Target>](#) parent element.

Table F-8 &lt;Transform&gt; Attributes

Attribute	Description	Required?
URI	<p>Specifies the URI of the transformation algorithm.</p> <p>SALT only supports the following transformation algorithm:</p> <ul style="list-style-type: none"> <li>• <a href="http://www.w3.org/2000/09/xmlsig#base64">http://www.w3.org/2000/09/xmlsig#base64</a> (Base64 decoding transforms)</li> </ul> <p>For detailed information about these transform algorithms, see <a href="#">XML-Signature Syntax and Processing</a>.</p>	Yes

## <UsePassword>

Specifies that whether the plaintext or the digest of the password appear in the SOAP messages. This element is used only with username tokens. In SALT, it must be specified as plaintext.

Table F-9 &lt;UsePassword&gt; Attributes

Attribute	Description	Required?
Type	<p>Specifies the type of password. SALT only supports cleartext passwords, the value URI is:</p> <ul style="list-style-type: none"> <li>• <a href="http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">http://docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText</a></li> </ul> <p>Specifies that cleartext passwords should be used in the SOAP messages.</p> <p><b>Note:</b> For backward compatibility reasons, the preceding URI can also be specified with an initial "www." For example:</p> <ul style="list-style-type: none"> <li>– <a href="http://www.docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText">http://www.docs.oasis-open.org/wss/2004/01/oasis-200401-wss-username-token-profile-1.0#PasswordText</a></li> </ul>	Yes

## Usage of MessageParts

When you use the <Integrity> assertion in your WS-Policy file, you are required to also use the Target child assertion to specify the targets of the SOAP message to digitally sign. The <Target> assertion in turn requires that you use the <MessageParts> child assertion to specify the actual

parts of the SOAP message that should be digitally signed. You can use the `Dialect` attribute of `<MessageParts>` to specify the dialect used to identify the SOAP message parts. Oracle SALT Web services security module supports only the following dialect:

- [Pre-Defined Message Part Selection Function](#)

Be sure that you specify a message part that actually exists in the SOAP messages that result from a client invoke of a message-secured Web Service. If the Web Services security module encounters an inbound SOAP message that does not include a part that the WS-Policy file indicates should be signed or encrypted, then the Web Services security module returns an error and the invoke fails.

## Pre-Defined Message Part Selection Function

This section shows SALT supported functions that are used with the "http://schemas.xmlsoap.org/2002/12/wsse#part" dialect for selecting parts of a message:

**Table F-10 SALT Supported Message Part Selection Function**

Function	Description
<code>wsp:Body()</code>	Specifies the entire SOAP message body to be selected as one part

You can only specify the entire SOAP body to be signed. It is recommended that you use the dialect that pre-defines the `wsp:Body()` function for this purpose.

[Listing F-2](#) shows a `wsp:Body()` function example

**Listing F-2 `wsp:Body()` Function**

```
<wssp:MessageParts
  Dialect="http://schemas.xmlsoap.org/2002/12/wsse#part">
  wsp:Body()
</wssp:MessageParts>
```



# Oracle SALT SCA ATMI Binding Reference

The following sections provide SCA ATMI Binding reference information:

- [SCA ATMI Binding Schema](#)
- [SCA ATMI Binding Attributes Description](#)

## SCA ATMI Binding Schema

[Listing G-1](#) shows how the ATMI binding element (`<binding.atmi>`) is defined. This is a pseudoschema that depicts how the grammar is used and what parameters are legal.

**Notes:** The parameters `"transactionalintent legacyintent"` are not literal values. `transactionalintent` can be substituted with `"suspendsTransaction"` or `"propagatesTransaction"` or omitted. `"legacyintent"` can be substituted with `"legacy"` or omitted.

Parameters with a `?` may be specified 0 or 1 times, and parameters with `*` may be specified 0 or more times.

When using the `<binding.atmi>` element, the total length of `/reference/@name` (or `/service/@name`) and method name must be equal to or less than the maximum length of a Tuxedo service name (this varies depending on the Tuxedo release). To overcome this limitation, see [</binding.atmi/map>](#).

**Listing G-1 SCA ATMI Binding Pseudoschema**

---

```

<binding.atmi requires="transactionalintent legacyintent"?>
  <tuxconfig>...</tuxconfig>?

  <map target="name">...</map>*
  <serviceType target="name">...</serviceType>*
  <inputBufferType target="name">...</inputBufferType>*
  <outputBufferType target="name">...</outputBufferType>*
  <errorBufferType target="name">...</errorBufferType>*
  <workStationParameters>?
    <networkAddress>...</networkAddress>?
    <secPrincipalName>...</secPrincipalName>?
    <secPrincipalLocation>...</secPrincipalLocation>?
    <secPrincipalPassId>...</secPrincipalPassId>?
    <encryptBits>...</encryptBits>?
  </workStationParameters>
  <authentication>?
    <userName>...</userName>?
    <clientName>...</clientName>?
    <groupName>...</groupName>?
    <passwordIdentifier>...</passwordIdentifier>?
    <userPasswordIdentifier>...
                                </userPasswordIdentifier>?
  </authentication>
  <fieldTablesLocation>...</fieldTablesLocation>?
  <fieldTables>...</fieldTables>?
  <fieldTablesLocation32>...</fieldTablesLocation32>?
  <fieldTables32>...</fieldTables32>?
  <viewFilesLocation>...</viewFilesLocation>?
  <viewFiles>...</viewFiles>?
  <viewFilesLocation32>...</viewFilesLocation32>?
  <viewFiles32>...</viewFiles32>?
  <remoteAccess>...</remoteAccess>?
  <transaction timeout="xsd:long"/>?
</binding.atmi>

```

---

# SCA ATMI Binding Attributes Description

The `<binding.atmi>` element supports the following attributes

- `</binding.atmi/@requires>`
- `</binding.atmi/tuxconfig>`
- `</binding.atmi/map>`
- `</binding.atmi/serviceType>`
- `</binding.atmi/inputBufferType>`, `</binding.atmi/outputBufferType>`,  
`</binding.atmi/errorBufferType>`
- `</binding.atmi/workStationParameters>`
- `</binding.atmi/authentication>`
- `</binding.atmi/fieldTablesLocation>`
- `</binding.atmi/fieldTablesLocation32>`
- `</binding.atmi/fieldTables>`
- `</binding.atmi/fieldTables32>`
- `</binding.atmi/viewFilesLocation>`
- `</binding.atmi/viewFilesLocation32>`
- `</binding.atmi/viewFiles>`
- `</binding.atmi/viewFiles32>`
- `</binding.atmi/remoteAccess>`
- `</binding.atmi/transaction/@timeout>`

## `</binding.atmi/@requires>`

- When this attribute contains the `legacy` value, it is used to perform interoperability with existing Tuxedo services. When not specified, communications are assumed to have SCA to SCA semantics where the actual Tuxedo service name is constructed from `/service/@name` or `/reference/@name` and actual method name (see [Listing G-1](#)), unless a `/binding.atmi/map` element is defined. When this attribute encounters a legacy

value, and no `/binding.atmi/map` element is defined for the method being called, it has the following run-time behavior:

- In a `<reference>` element: the value specified in the `/reference/@name` is used to perform the Tuxedo call, with semantics used according to the interface method.
- In a `<service>` element: the Tuxedo service specified in the `/binding.atmi/map` element is advertised, and mapped to the method specified in the `/binding.atmi/map/@target` attribute.
- When this attribute contains a transaction value, it specifies the transactional behavior that the binding extension follows when this binding is used. Possible values are as follows:
  - not specified (no value) - all transactional behavior is controlled by the Tuxedo configuration. If the Tuxedo configuration supports transactions, then one may be propagated if it exists. If the Tuxedo configuration does not support transactions and one exists then an error will occur. However, a transaction cannot start if one does not already exist.
  - `suspendsTransaction` - transaction context is propagated to the called service. For a `<service>` element when a transaction is present, it is automatically suspended before invoking the application code. It resumes afterwards, regardless of the outcome of the invocation. For a `<reference>` element, it is equivalent to making a `tpcall()` with the `TPNOTRAN` flag.
  - `propagatesTransaction` - only applicable to `<reference>` elements. It is ignored for `<service>` elements. This value starts a new transaction if one does not already exist, otherwise it participates in the existing transaction.

Such behavior can be obtained in a component or composite `<service>` element by configuring `AUTOTRAN` in the `UBBCONFIG` file. An error is generated if a Tuxedo server hosts the SCA component implementation and it is not configured in a transactional group in the `UBBCONFIG` file.

## **`</binding.atmi/tuxconfig>`**

Used in `<reference>` elements when `/binding.atmi/workstationParameters` is not set, and for client-only processes. It indicates the Tuxedo application that the process should join. One process can join multiple applications, or switch applications without having to restart.

If not set, the `TUXCONFIG` environment variable is used. If not set, but one is required, the process exits and returns an error.

## **</binding.atmi/map>**

For `<reference>` elements, `</binding.atmi/map>` provides the Tuxedo service name that should be used when performing the invocation to the corresponding `/binding.atmi/map/@target` value, this value being the name of the method being called.

For `<service>` elements, `</binding.atmi/map>` provides the Tuxedo service name that should be advertised for the corresponding `/binding.atmi/map/@target` value.

The `/binding.atmi/map/@target` value *must* match the method name of the corresponding service interface.

If a `/binding.atmi/map` element is present, it takes precedence over any other form of service/method to Tuxedo service name mapping. See [</binding.atmi/@requires>](#) attribute.

## **</binding.atmi/serviceType>**

Optional element that specifies the type of call being handled. The accepted values are:

- `Oneway` - the call will not expect a response.
- `RequestResponse` - regular call paradigm, default value.

## **</binding.atmi/inputBufferType>, </binding.atmi/outputBufferType>, </binding.atmi/errorBufferType>**

Optional elements that specify the type of buffer that the processes exchange. The `inputBufferType` element is used by the binding extension to determine or check the type of the request.

The `outputBufferType` element is used by the binding extension to determine or check the type of the reply.

The `errorBufferType` element is used to determine the type of buffer specified in the data portion of the Exception thrown received by a client or thrown by a server.

[Table G-1](#) lists supported values and corresponding Tuxedo buffer types. An incorrect value or syntax is detected at run time and causes the call to fail. If not specified, the default value used is `STRING`.

**Table G-1 SCA Supported Tuxedo Buffer Types**

/binding.atmi/bufferType value	Tuxedo buffer type	Note
STRING	STRING	
CARRAY	CARRAY	
X_OCTET	X_OCTET	
VIEW	VIEW	Format is VIEW/<subtype>
X_C_TYPE	X_C_TYPE	Format is X_C_TYPE/<subtype>
X_COMMON	X_COMMON	Format is: X_COMMON/<subtype>
VIEW32	VIEW32	Format is VIEW32 /<subtype>
XML	XML	
FML	FML	<p>Format is: FML/&lt;subtype&gt;,&lt;subtype&gt; is optional</p> <p>The &lt;subtype&gt; value allows to specify the SDO type to use for that message (request or response) when it is described in an XML schema</p> <p><b>Note:</b> FML32 &lt;subtype&gt; is not available for JATMI binding.</p>

**Table G-1 SCA Supported Tuxedo Buffer Types**

<code>/binding.atmi/bufferType</code> value	Tuxedo buffer type	Note
FML32	FML32	<p>Format is: FML32/&lt;subtype&gt;, &lt;subtype&gt; is optional</p> <p>The &lt;subtype&gt; value allows to specify the SDO type to use for that message (request or response) when it is described in an XML schema</p> <p><b>Note:</b> FML32 &lt;subtype&gt; is not available for JATMI binding.</p>
MBSTRING	MBSTRING	

## **</binding.atmi/workStationParameters>**

An optional element that specifies parameters specific to the Tuxedo WorksStation protocol. Only used in references.

- `/binding.atmi/workStationParameters/networkAddress`

The address of the workstation listener to which this application will connect. Any address format accepted by the Tuxedo workstation software is allowed. The most common address format is:

```
//<hostname or IP address>:<port>.
```

For more information, see the SALT Programming Guide

More than one address can be specified (if required), by specifying a comma-separated list of pathnames for WSNADDR. Addresses are tried in order until a connection is established. Any member of an address list can be specified as a parenthesized grouping of pipe-separated network addresses. For example:

```
<networkAddress>
  (//m1.acme.com:3050|//m2.acme.com:3050),//m3.acme.com:3050
</networkAddress>
```

Tuxedo randomly selects one of the parenthesized addresses. This strategy distributes the load randomly across a set of listener processes. Addresses are tried in order until a connection is established.

On versions of Tuxedo that support ipv6, the corresponding addressing format will also be supported, following the same format as used in `WSNADDR` for Tuxedo /WS clients.

- `secPrincipalName`, `secPrincipalLocation`, `secPrincipalPassId`

These parameters specify the necessary parameters when an SSL connection is required by a workstation client. The password is stored in a separate file and accessed using a callback mechanism. The default callback uses the `password.store` file maintained using the `scapasswordtool` command. For more information, see the SALT Programming Guide

- `encryptBits`

Specifies the encryption strength that this client connection will attempt to negotiate. The format is `<minencryptbits>/<maxencryptbits>` (for example, 128/128), those values being numerical. Invalid values will result in a configuration exception being thrown.

Values can be 0 (if no encryption is used), or 40, 56, 128, or 256 (if the number specified is the number of significant bits in the encryption key).

## </binding.atmi/authentication>

Specifies the security parameters used in reference-type calls to establish a connection with the Tuxedo application. The following values respectively correspond to the `TPINFO` structure elements `username`, `cltname`, `grpname` and `passwd` (for more information, see `tpinit(3c)` in the Oracle Tuxedo ATMI C Function Reference guide):

- `/binding.atmi/authentication/username`
- `/binding.atmi/authentication/clientName`
- `/binding.atmi/authentication/groupName`
- `/binding.atmi/authentication/passwordIdentifier-(application password)`
- `/binding.atmi/authentication/userPasswordIdentifier-(user password in per-user authentication)`

Passwords are not stored in clear text, but are looked up using an identifier. A callback function may be used to retrieve passwords. For more information, see `setSCAPasswordCallback()` in the Oracle SALT Reference Guide.

By default, passwords are maintained encrypted in a passwords store file located in the same directory as the composite file that contains the `/reference/binding.atmi/authentication/passwordIdentifier` or



`/reference/binding.atmi/authentication/userPasswordIdentifier` element. This identifier is read as necessary to perform authentication.

For more information, see [scapasswordtool](#) and [setSCAPasswordCallback\(3c\)](#) in the Oracle SALT Reference Guide.

**Note:** This information should be handled with policy sets and intents when the SCA Kernel supports it.

## **</binding.atmi/fieldTablesLocation>**

Optional element that specifies a directory in the local file system where field tables should be searched. If a relative path is specified, files are searched in that location relative to `$APPDIR`, otherwise the location is assumed to be absolute.

## **</binding.atmi/fieldTablesLocation32>**

Same as `fieldTablesLocation`, but for FML32 buffers.

## **</binding.atmi/fieldTables>**

Optional element that specifies the FML field tables available. Field tables are searched in the location specified by the `/binding.atmi/fieldTablesLocation` element.

If the `/binding.atmi/bufferType` value is FML and this element is not specified or invalid (that is, the tables indicated cannot be found or are not field tables), an error is displayed at initialization time for client processes, or boot time for server processes.

## **</binding.atmi/fieldTables32>**

Same as `fieldTables`, but for FML32 buffers.

## **</binding.atmi/viewFilesLocation>**

Optional element that specifies a directory in the local file system where view tables should be searched. If a relative path is specified, files are searched in that location relative to `$APPDIR`, otherwise the location is assumed to be relative.

## **</binding.atmi/viewFilesLocation32>**

Same as `viewTablesLocation`, but for VIEW32 buffers.

## **</binding.atmi/viewFiles>**

Optional element that specifies the VIEW files to be used by the affected component(s). If the `/binding.atmi/bufferType` value is VIEW and this element is not specified or invalid (that is, the files indicated cannot be found, or are not view files), an error is displayed at run time for client processes, or boot time for server processes.

## **</binding.atmi/viewFiles32>**

Same as ViewFiles but for VIEW32 buffers.

**Note:** FML/FML32 and VIEW/VIEW32 parameters are optional and may be omitted, in which case the corresponding Tuxedo environment variables are required (FLDTBLDIR/32, FLDTBLS/32, VIEWDIR/32 and VIEWFILES/32). If neither are used, an error message is printed at run time when attempting to use a fielded buffer. If both are set, the parameters contained in the SCDL code take precedence.

## **</binding.atmi/remoteAccess>**

Optional element that specifies the communication protocol with one of the values below. The default is Native.

- Native - indicates that components use standard Tuxedo native communications (IPC queues)
- WorkStation - indicates that components use the Tuxedo /WS communication protocol.

If set to this value, the binding extension checks that the `/binding.atmi/workStationParameters` element is also populated and valid; if not, it reports a run-time error message.

## **</binding.atmi/transaction/@timeout>**

Specifies the amount of time, in seconds, a transaction can execute before timing out. This attribute affects components or clients that effectively start a global transaction. It is mandatory for `<reference>` components and ignored if set on `<service>` components. Additionally, the value is ignored on components for which the transaction has already been started. If a transaction needs to be started and this attribute is not present (for example, `"requires=propagatesTransaction"` is set), a configuration error occurs.

## See Also

- [buildscaclient](#), [buildscacomponent](#), and [buildscaserver](#) in the Oracle SALT Command Reference.
- [Oracle SALT Programming Guide](#)



# Oracle SALT HTTP FML32 Buffer Format

The following section(s) provide Oracle SALT HTTP FML32 Buffer Format information:

- [Oracle SALT HTTP FML32 Buffer Format](#)

## Oracle SALT HTTP FML32 Buffer Format

Oracle Tuxedo services may be developed to generate dynamic HTML content. These services are sent data in a specific FML32 format, and must return responses in another FML32 buffer as shown in [Listing H-1](#)

### Listing H-1 Oracle SALT HTTP FML32 Buffer Format

---

```
#include <atmi.h>

#include <userlog.h>

#include <fml32.h>

#include <httpflds.h> /* contains the HTTP field definitions */

/**
 * MyService. Must match the TuxService parameter
 * configured in mod_tuxedo
```

```
*/  
  
MyService(TPSVCINFO *rqst) {  
    FBFR32 *response_buf;  
  
    int rc;  
  
    char *query_string;  
  
    long query_len;  
  
    char *response_body = "<html>\n<head>\n<title>Tuxedo"  
                           "Test</title>\n</head>\n<body>\n"  
                           "<p>Hello World</p>\n</body>\n<html>";  
  
  
    query_string = malloc(QUERY_SIZE);  
  
    if (query_string == NULL) {  
        userlog("Unable to allocate query_string: %d", errno);  
        tpreturn(TPFAIL, 0, NULL, 0L, 0);  
    }  
  
  
    rc = Fget32(rqst->data, QUERY_STRING, 0,  
               (char*)query_string,  
               &query_len);  
  
    if (rc < 0) {  
        userlog("Problem extracting query_string: %s",  
               Fstrerror32(Ferror32));  
        tpreturn(TPFAIL, 0, NULL, 0L, 0);  
    }  
  
  
    userlog("QUERY_STRING received: %s", query_string);  
}
```

```

if((response_buf =
    (FBFR32 *) tmalloc("FML32", NULL, 1024 )) == NULL) {
    userlog("Unable to allocate response_buf:%s",
        tpstrerror(tperrno));
    tpreturn(TPFAIL, 0, NULL, 0L, 0);
}

if((response_data =
    tmalloc("CARRAY", NULL, strlen(response_body) + 1) == NULL) {
    userlog("Unable to allocate response_buf:%s",
        tpstrerror(tperrno));
    tpreturn(TPFAIL, 0, NULL, 0L, 0);
}

strcpy(response_data, response_body);

rc = Fchg32(response_buf, RESPONSE_DATA, 0,
    (char*)response_data,
    0);

if (rc < 0) {
    userlog("Problem setting response data: %s",
        Fstrerror32(Ferror32));
    tpreturn(TPFAIL, 0, NULL, 0L, 0);
}

tpreturn(TPSUCCESS, 0, (char *)response_buf, 0L, 0);
}

```

---

## Input Buffers

Upon invocation by `mod_tuxedo`, an Oracle Tuxedo service receives an FML32 buffer as listed in [Table H-1](#).

**Table H-1 Input Buffers**

Field Name	Description	Type
AUTH_TYPE	Describes the authentication method used by the web browser if any authentication method was used. This is not present unless security is used.	string
CONTENT_TYPE	Tells the media type of data being received from the user. This is used for requests performed using the POST method, and not present otherwise.	string
DOCUMENT_ROOT	The root path to the home HTML page for the server. Example: /home/httpd/html	string
PATH_INFO	Extra path information added to the end of the URL that accessed the server side script program.	string
PATH_TRANSLATED	A translated version of the PATH_INFO variable translated by the webserver from virtual to physical path information.	string



**Table H-1 Input Buffers**

Field Name	Description	Type
QUERY_STRING	<p>&lt;A HREF="/cgi-bin/hits.pl?mainpage &gt;&lt;/A&gt;</p> <p>The information after the ? is the QUERY_STRING which is "mainpage" in this case. In this case QUERY_STRING will contain: mainpage</p>	string
REMOTE_ADDR	<p>The IP address of the client computer. Example: 132.15.28.124</p>	string
REMOTE_HOST	<p>The fully qualified domain name of the client machine making the HTTP request. It may not be possible to determine this name since many client computers names are not recorded in the DNS system. Example: myhost.mycompany.com</p>	string
REMOTE_IDENT	<p>The ability to use this field is limited to servers that support RFC 931. This field may contain the client machine's username, but it is intended to be used for logging purposes only, when it is available.</p>	string
REMOTE_PORT	<p>The clients requesting port. An example: 3465</p>	string
REMOTE_USER	<p>If security is enabled and the user had to be logged in to get access to the service, this value will contain the user's log in name.</p>	string

**Table H-1 Input Buffers**

Field Name	Description	Type
REQUEST_URI	The path of the request sent by the client. An example:  /tux/processorder?orderId=1234	string
REQUEST_METHOD	This describes the request method used by the browser which is normally GET, POST, or HEAD.	string
SERVER_ADMIN	The e-mail address of the server administrator. Example:  webadmin@myhost.mycompany.com	string
SERVER_NAME	The server hostname, IP address or DNS alias name shown as a self referencing URL. This does not include the protocol identifier such as "HTTP:", the machine name, or port number. Example:  myhost	string
SERVER_PORT	The port number the HTTP requests and responses are being sent on. Example:  80	string
SERVER_PROTOCOL	This value is normally HTTP which describes the protocol being used between the client and server computers. Example:  HTTP/1.1	string
SERVER_SIGNATURE	Server information specifying the name and version of the web server and the port being serviced. Example:  Apache/2.2.15 Server at myhost Port 80	string

**Table H-1 Input Buffers**

Field Name	Description	Type
SERVER_SOFTWARE	The name and version of the web server. Example: Apache/2.2.15 (Unix) mod_fastcgi/2.4.6 mod_tuxedo/1.0.0	string
HTTP_ACCEPT	The media types of data that the client browser can accept. These data types are separated by commas. An example: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg, application/vnd.ms-excel, application/msword, application/vnd.ms-powerpoint, */*	string
HTTP_ACCEPT_ENCODING	An example: gzip, deflate	string
HTTP_ACCEPT_LANGUAGE	The language the client browser accepts. Example: en-us	string
HTTP_COOKIE	Used as an environment variable that contains cookies associated with the server domain from the browser.	string
HTTP_FORWARDED	For example: by http://proxy.yourcompany.com:80 80 (Netscape-Proxy/3.5)	string
HTTP_HOST	For example: yourhost.yourcompany.com	string
HTTP_PRAGMA	For example: No-Cache	string

Table H-1 Input Buffers

Field Name	Description	Type
HTTP_REFERER	The page address where the HTTP request originated.	string
HTTP_USER_AGENT	The name of the client web browser being used to make the request. Example: Mozilla/5.0 (X11; U; Linux i686; en-US) AppleWebKit/532.9 (KHTML, like Gecko) Chrome/5.0.307.11	string
POST_DATA	For POST requests, the data as it was sent by the client browser. The data is url-encoded. Example: Name=Jonathan+Doe&Age=23&Formula=a+%2B+b+%3D%3D+13%25%21	carray

## Output Buffers

An Oracle Tuxedo server called by `mod_tuxedo` must return an FML32 buffer containing the fields described in [Table H-2](#) . Returning a buffer of any other type, or missing any of the mandatory fields results in a server error being returned to the client browser.

**Table H-2 Output Buffers**

<b>Field Name</b>	<b>Description</b>	<b>Type</b>
RESPONSE_CODE*	Numeric code corresponding to the status string to return to the client.  Examples: 200 or 404 or 302.  This field is mandatory.	long
STATUS_LINE	String version containing the complete status string to return to the client.  Examples: 200 OK 302 FOUND  This field is optional.	String
CONTENT_TYPE	Gives the MIME-type of the data in the body, such as text/html or image/gif.  A typical value is text/html, but programs may generate images and return image/gif contents.  If not specified, a text/html header is generated and returned.	string
HTTP_COOKIE	Corresponds to the Set-cookie header. May contain cookie data. For example, session ids may be set using this field.  Example contents: sessionid=bdbb4cd00829aa5ffb5402395cb8f8c0; expires=Fri, 18-Mar-2011 19:39:19 GMT; Max-Age=1209600; Path=/  This field is optional.	string

**Table H-2 Output Buffers**

Field Name	Description	Type
LOCATION	<p>Usually used in conjunction with '302 FOUND' response codes, contains the location of the redirect url.</p> <p>Example:  http://123.456.1.123:2280/admin/</p> <p>This field is mandatory if a '302 FOUND' response is returned.</p>	string
RESPONSE_DATA*	<p>The data that will be returned to the client browser or program, excluding headers. Proper headers are handled and generated by mod_tuxedo. For example:</p> <pre>&lt;html&gt;   &lt;head&gt;     &lt;title&gt;Tuxedo Test&lt;/title&gt;   &lt;/head&gt;   &lt;body&gt;     &lt;p&gt;Hello World&lt;/p&gt;   &lt;/body&gt; &lt;/html&gt;</pre>	carray