Orbix C++
Programmer's Reference

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Preface

The *Orbix C++ Programmer's Reference* provides a complete reference for the application programming interface (API) to Orbix.

Audience

The *Orbix C++ Programmer's Reference* is designed as a reference for Orbix programmers. Before using this guide, read the *Orbix C++ Programmer's Guide* to learn about writing distributed applications using Orbix.

Organization of this Guide

This guide is divided into three parts as follows:

Part I, Orbix Class Reference

This part provides a full reference listing for each of the Orbix C++ classes. These classes are defined in the Orbix include file `CORBA.h` and provide the main application programming interface to Orbix.

Part II, IDL Interface to the Interface Repository

The Interface Repository is the component of Orbix that provides runtime access to IDL definitions. The application programming interface to this component is defined in IDL. Part II provides an exhaustive reference for the IDL interface to the Interface Repository.

Part III, IDL Interface to the Orbix Daemon

The Orbix daemon process, `orbixd`, manages several components of Orbix, including the Orbix Implementation Repository. This part provides a complete reference for the IDL interface to the Orbix daemon, which allows you to access the daemon functionality in your Orbix applications. The Orbix daemon acts as an Orbix server, with server name `IT_daemon`.

Document Conventions

This guide uses the following typographical conventions:

`Constant width`	Constant width (courier font) in normal text represents portions of code and literal names of items such as classes, functions, variables, and data structures. For example, text might refer to the `CORBA::Object` class. Constant width paragraphs represent code examples or information a system displays on the screen. For example: `#include <stdio.h>`
Italic	Italic words in normal text represent *emphasis* and *new terms*. Italic words or characters in code and commands represent variable values you must supply, such as arguments to commands or path names for your particular system. For example: `% cd /users/`*`your_name`* Note: Some command examples may use angle brackets to represent variable values you must supply. This is an older convention that is replaced with *italic* words or characters.

This guide may use the following keying conventions:

No prompt	When a command's format is the same for multiple platforms, no prompt is used.
%	A percent sign represents the UNIX command shell prompt for a command that does not require root privileges.
#	A number sign represents the UNIX command shell prompt for a command that requires root privileges.
>	The notation > represents the DOS, Windows NT, or Windows 95 command prompt.

... . . .	Horizontal or vertical ellipses in format and syntax descriptions indicate that material has been eliminated to simplify a discussion.
[ ]	Brackets enclose optional items in format and syntax descriptions.
{ }	Braces enclose a list from which you must choose an item in format and syntax descriptions.
|	A vertical bar separates items in a list of choices enclosed in { } (braces) in format and syntax descriptions.

Part I

Orbix Class Reference

The CORBA.h Classes

The Orbix include file `CORBA.h` implements the IDL CORBA module defined by the Object Management Group (OMG). This module contains a number of IDL interfaces and pseudo interfaces that are mapped to C++ classes as described in the *Orbix C++ Programmer's Guide*. Orbix adds member functions to these classes and also provides additional classes to implement Orbix features such as *loaders*, *locators*, and *filters*. To assist programmers, each member function in these classes is labelled "CORBA compliant" or "Orbix specific" as appropriate.

Many classes in `CORBA.h` also contain member functions that are needed only by generated code, by older versions of Orbix, or internally by Orbix. Since Orbix programmers should not need to use such functions—and indeed are recommended not to use them since they may not be supported in future releases—these are not documented in this guide.

Memory Allocation

This section highlights the general rules for memory management that are followed in the CORBA.h classes. Unless stated otherwise, you can assume the following:

Copy constructor	Example:
	`// C++`
	`class T {`
	`  T(const T& t);`
	`};`
	Usage:
	`// C++`
	`T t;`
	`T new_t = t;`
	Initializes a new class object from an existing one. For a class T, the copy constructor creates a new T and deep copies its argument t.

Assignment operator	Example:
	`// C++`
	`class T {`
	`  operator=(const T& t);`
	`};`
	Usage:
	`// C++`
	`T t1, t2;`
	`t1 = t2;`
	The assigment operator frees memory associated with the target (t1) object and deep copies its argument (t2) to the invoked object.

const argument	Behaves as an "in" parameter. The caller is responsible for freeing any dynamically allocated memory.

non-const argument	Behaves as an "out" or "inout" parameter. Assume the function modifies the object or pointer.
const return value	Orbix is responsible for freeing any dynamically allocated memory. The returned value should be copied if the caller wishes to retain it.
non-const return value	The caller is responsible for freeing the object.
_ptr return value	The caller is responsible for freeing the object reference or assigning it to a _var variable for automatic management.

CORBA

Synopsis The CORBA namespace implements the IDL CORBA module and includes a number of classes and other definitions specific to Orbix.

This chapter describes the functions and some useful definitions described directly in the CORBA namespace. Classes defined in the CORBA module are described in their individual chapters.

CORBA::_LOCATOR_HOPS

Synopsis
```
static ULong _LOCATOR_HOPS;
```

Description The value used by `_bind()` to determine the number of hosts involved in a search. You can change this if you want to modify how `_bind()` uses `CORBA::locatorClass::lookUp()`.

Notes Orbix specific.

See Also
`CORBA::_MAX_LOCATOR_HOPS`
`CORBA::locatorClass`

CORBA::_MAX_LOCATOR_HOPS

Synopsis
```
static const ULong _MAX_LOCATOR_HOPS;
```

Description The absolute maximum number of hops that can be used to fulfil a request; use this to limit the number of hosts involved in a search.

Notes Orbix specific.

See Also
`CORBA::_LOCATOR_HOPS`
`CORBA::locatorClass`

CORBA::_OBJECT_TABLE_SIZE_DEFAULT

Synopsis

```
static const ULong _OBJECT_TABLE_SIZE_DEFAULT;
```

Description

The default size of the object table. All Orbix objects (including proxies) in an address space are registered in its object table (OT), a hash table that maps from object identifiers to the location of objects in virtual memory. If the table contains many objects, overflow chains are automatically added by Orbix.

You can change the default size (which is of the order of 1000) using `CORBA::ORB::reSizeObjectTable()`.

Notes

Orbix specific.

See Also

`CORBA::ORB::reSizeObjectTable()`

CORBA::arg()

Synopsis

```
static IT_Request_LS arg(const char* name);
```

Description

A manipulator function to assist in inserting arguments into a `CORBA::Request`, by naming the argument explicitly. For example:

```
// C++
// Insert parameter "height".
// Here, r is a CORBA::Request.
r << CORBA::arg("height") << 65;
```

Explicit naming of parameters does not remove the requirement that parameters must be inserted in the proper order. However, if the same name is used again, its previous value is replaced with a new value.

Notes

Orbix specific.

See Also

`CORBA::Request::operator<<()`

CORBA::default_environment

Synopsis

```
static Environment default_environment;
```

Description

The default environment. Each function of an IDL C++ class has a default parameter whose value is set to `default_environment`. Refer to class `CORBA::Environment` for details.

The value `default_environment` used in the Orbix API and in IDL C++ classes is subject to change. However, any change does not affect application programmers who should continue to use `default_environment` as the default value for the `Environment` parameter of implementation class operations.

Notes

Orbix specific.

See Also

`CORBA::Environment`

CORBA::extract()

Synopsis

```
static IT_Request_RS extract(
   const char* tcode, void* type);
```

Description

A manipulator function to extract a user-defined IDL type from a `CORBA::Request` object.

An example of its use for structs is:

```
// IDL
struct Example {
   long l;
   char c;
};

// C++
CORBA::Request r;
Example e;
r >> CORBA::extract(_tc_Example, &e);
```

`CORBA::extract()` uses the `TypeCode` generated by the IDL compiler for the type. In this case, `_tc_Example` is the `TypeCode` for the IDL struct `Example`.

This manipulator also works for primitive types and for arrays.

Parameters

tcode	The TypeCode object reference for the type of the second parameter. The type of this parameter in the extract() manipulator is char*. (For historical reasons the underlying implementation is in terms of char*.) An appropriate conversion takes place if you pass a TypeCode object reference.
type	A pointer to the user-defined type.

Notes Orbix specific. The CORBA compliant function is CORBA::Request::result().

See Also
CORBA::insert()
CORBA::Request::result()
CORBA::Request::operator>>()
CORBA::Request()
CORBA::TypeCode

CORBA::insert()

Synopsis

```
static IT_Request_LS insert(
   const char* _tc_string, void* type);
static IT_Request_LS insert(
   const char* tcode, void* type, Flags flags));
```

Description A manipulator function to insert a user-defined IDL type into a CORBA::Request object.

An example of its use for structs is:

```
// IDL
struct Example {
   long l;
   char c;
};

// C++
CORBA::Request r;
Example e;
e.l = 27; e.c = 'f';
r << CORBA::insert(_tc_Example,
                   &e, CORBA::inMode);
```

CORBA::insert() uses the TypeCode generated by the IDL compiler for the type. In this case, _tc_Example is the TypeCode for the IDL struct Example.

This manipulator also works for primitive types and for arrays.

Parameters

tcode	The TypeCode object reference for the type of the second parameter. The type of this parameter in the extract() manipulator is char*. (For historical reasons the underlying implementation is in terms of char*.) An appropriate conversion takes place if you pass a TypeCode object reference.
type	A pointer to the user-defined type.
flags	The parameter passing mode: CORBA::inMode, CORBA::outMode or CORBA::inoutMode.

Notes Orbix specific.

See Also
CORBA::extract()
CORBA::TypeCode
CORBA::Request::operator<<()
CORBA::Request::insertOctet()
CORBA::Request::encodeArray()

CORBA::is_nil()

Synopsis
```
static Boolean is_nil(IDL_Interface_ptr obj) const;
```

Description A version of this function is generated for each IDL interface, IDL_Interface, and for each pseudo object type.

The function tests if obj is a nil reference.

Return Value Returns true if obj is a nil object reference, returns false otherwise.

Notes CORBA compliant.

See Also
CORBA::Object::_isNullProxy()
CORBA::Object::_isNull()

CORBA::ORB_init()

Synopsis

```
#ifdef USE_INIT
ORB_ptr ORB_init(int& argc,
   char** argv,
   ORBid orb_identifier,
   CORBA::Environment& env=IT_chooseDefaultEnv());
#endif
```

Description

Initializes a client or server's connection to Orbix. In Orbix, the object reference returned by `ORB_init()` is identical to that in `CORBA::Orbix`.

To use `ORB_init()`, the macro `USE_INIT` must be `#defined` *before* `CORBA.h` is included.

Code using the `ORB_init()` function must be linked with the Orbix library.

On UNIX platforms, this library is named `liborbix` (`liborbixmt` for multi-threaded Orbix). On Windows NT, the library is named `ITCi.lib` (`ITMi.lib` for multi-threaded Orbix).

Parameters

`argc`	The number of arguments in `argv`.

`argv`	A sequence of option or configuration strings used if `orb_identifier` is a null string. Each string is of the form:
	`-ORB<suffix> <value>`
	where `<suffix>` is the name of the option being set, and `<value>` is the value to which the option is set. Any string that is not in this format is ignored. An example parameter to identify the Orbix ORB is:
	`-ORBid Orbix`

`orb_identifier`	A string identifying the ORB. The string "Orbix" identifies the Orbix ORB from IONA Technologies. (Names of ORBs are locally administered by ORB vendors rather than by the OMG.) If this parameter is null, the content of `argv` is checked.

Notes CORBA compliant. In Orbix, it is not necessary to call this function before using the ORB since Orbix automatically initializes a client or server's connection, making access to the ORB available through the `CORBA::Orbix` object.

See Also `CORBA::ORB::BOA_init()`

CORBA::release()

Synopsis

```
static void release(IDL_Interface_ptr obj);
```

Description A version of this function is generated for each IDL interface type, `IDL_Interface`, and for each pseudo object type.

The function decrements the reference count of `obj`. The object is freed by Orbix if the reference count is then zero.

Calling `release()` on a nil object reference has no effect.

Notes CORBA compliant.

See Also `CORBA::A::_duplicate()`
`CORBA::Object::_refCount()`

CORBA::string_alloc()

Synopsis

```
static char* string_alloc(ULong len);
```

Description Dynamically allocates a string of length `len+1`. A conforming program should use this function to dynamically allocate a string that is passed between a client and a server.

Return Value Returns a pointer to the start of the character array; returns a zero pointer if it cannot perform the allocation.

Notes CORBA compliant.

See Also `CORBA::string_free()`
`CORBA::string_dup()`

CORBA::string_dup()

Synopsis `static char* string_dup(const char* s);`

Description Duplicates the string s.

Return Value Returns a duplicate of the string s; returns a zero pointer if it is unable to perform the duplication. `CORBA::string_alloc()` may be used to allocate space for the string.

Notes CORBA compliant.

See Also `CORBA::string_alloc()`
`CORBA::string_free()`

CORBA::string_free()

Synopsis `static void string_free(char* str);`

Description Deallocates the string `str`. The string `str` must have been allocated using `CORBA::string_alloc()`.

Notes CORBA compliant.

See Also `CORBA::string_alloc()`
`CORBA::string_dup()`

CORBA::Any

Synopsis

The C++ class CORBA::Any implements the IDL basic type any, which allows the specification of values that can express an arbitrary IDL type. This allows a program to handle values whose types are not known at compile time. The IDL type any is most often used in code that uses the Interface Repository or the Dynamic Invocation Interface (DII).

Consider the following interface:

```
// IDL
interface Example {
   void op(in any value);
};
```

A client can construct an any to contain an arbitrary type of value and then pass this in a call to operation op(). A process receiving an any must determine what type of value it stores and then extract the value.

Orbix

Type any is mapped to a C++ class that conceptually contains a TypeCode and a value:

```
// C++
// In namespace CORBA.
class Any {
public:
   Any();
   Any(const Any&);
   Any(TypeCode_ptr type, void* val,
      Boolean release = 0,
      Environment& IT_env = default_environment);
   void replace(TypeCode_ptr type, void* val,
      Boolean release = 0,
      Environment& IT_env = default_environment);
   Any& operator=(const Any& a);
   ~Any();

   void operator<<=(Short);
   void operator<<=(Long);
   void operator<<=(LongLong);
   void operator<<=(UShort);
```

```
void operator<<=(ULong);
void operator<<=(ULongLong);
void operator<<=(Float);
void operator<<=(Double);
void operator<<=(const char*);
void operator<<=(const Any&);
void operator<<=(const TypeCode_ptr&);
void operator<<=(Object_ptr);

Boolean operator>>=(Short&) const;
Boolean operator>>=(Long&) const;
Boolean operator>>=(LongLong) const;
Boolean operator>>=(UShort&) const;
Boolean operator>>=(ULong&) const;
Boolean operator>>=(ULongLong) const;
Boolean operator>>=(Float&) const;
Boolean operator>>=(Double&) const;
Boolean operator>>=(char*&) const;
Boolean operator>>=(Any&) const;
Boolean operator>>=(TypeCode_ptr&) const;
Boolean operator >>= (Object_ptr&) const;

void operator<<=(from_boolean b);
void operator<<=(from_octet o);
void operator<<=(from_char c);

Boolean operator>>=(to_boolean b) const;
Boolean operator>>=(to_octet o) const;
Boolean operator>>=(to_char c) const;

TypeCode_ptr type () const;
void* value () const;

// Helper types needed for insertion of
// boolean, octet, and char:[1]
struct from_boolean {
   from_boolean(CORBA::Boolean b) : val(b) {};
   CORBA::Boolean val;
};
```

1. See "CORBA::Any::operator<<=()" on page 20.

```
        struct from_octet {
           from_octet(CORBA::Octet o) : val(o) {};
           CORBA::Octet val;
        };

        struct from_char {
           from_char(CORBA::Char c) : val(c) {};
           CORBA::Char val;
        };

        // Helper types needed to extract boolean,
        // octet, and char:[2]
        struct to_boolean {
           to_boolean(CORBA::Boolean& b) : ref(b) {};
           CORBA::Boolean& ref;
        };

        struct to_octet {
              to_octet(CORBA::Octet& o) : ref (o) {};
              CORBA::Octet& ref;
        };

        struct to_char {
           to_char(CORBA::Char& c) : ref (c) {};
           CORBA::Char& ref;
        };
     };
```

Notes CORBA compliant.

See Also CORBA::TypeCode

2. See "CORBA::Any::operator>>=()" on page 22.

CORBA::Any::Any()

Synopsis

```
Any();
```

Description

The default constructor creates an Any with a TypeCode of type tk_null and with a zero value. The easiest and the type-safe way to construct an Any is to use the default constructor and then use operator<<=() to insert a value into the Any. For example,

```
// C++
CORBA::Short s = 10;
CORBA::Any a;
a <<= s;
```

Notes

CORBA compliant.

See Also

CORBA::Any::operator<<=()

Other Any constructors.

CORBA::Any::Any()

Synopsis

```
Any(const Any& a);
```

Description

Copy constructor. The constructor duplicates the TypeCode_ptr of a and copies the value.

Notes

CORBA compliant.

See Also

Other Any constructors.

CORBA::Any::Any()

Synopsis

```
Any(TypeCode_ptr type, void* val,
   Boolean release = 0);
```

Description

Constructs an Any with a specific TypeCode and value. This constructor is needed for cases where it is not possible to use the default constructor and operator<<=(). For example, since all strings are mapped to char*, it is not possible to create an Any with a specific TypeCode for a bounded string.

Note: This constructor is not type-safe; you must ensure consistency between the TypeCode and the actual type of the argument `val`.

Parameters

`type`	A reference to a `CORBA::TypeCode`. The constructor duplicates this object reference.
`val`	The value pointer. A conforming program should make no assumptions about the lifetime of the value passed in this parameter once it has been passed to this constructor with `release=1`.
`release`	A boolean variable to decide ownership of the storage pointed to by `val`. If set to `1`, the Any object assumes ownership of the storage. If the `release` parameter is set to `0` (the default), the calling program is responsible for managing the memory pointed to by `val`.

Notes CORBA compliant.

See Also `CORBA::Any::operator<<=()`
`CORBA::Any::replace()`

Other Any constructors.

CORBA::Any::~Any()

Synopsis

```
~Any();
```

Description Destructor for an Any. Depending on the value of the `Boolean release` parameter to the complex constructor, it frees the value contained in the Any based on the TypeCode of the Any. It then frees the TypeCode.

Notes CORBA compliant.

See Also `CORBA::Any::Any(TypeCode_ptr, void*, Boolean)`

CORBA::Any::operator=()

Synopsis

```
Any& operator=(const Any& a);
```

Description The assignment operator releases its TypeCode and frees the value if necessary; it duplicates the TypeCode of a and deep copies the parameter's value.

Notes CORBA compliant.

CORBA::Any::operator<<=()

Synopsis

```
void operator<<=(Short);
void operator<<=(Long);
void operator<<=(LongLong);
void operator<<=(UShort);
void operator<<=(ULong);
void operator<<=(ULongLong);
void operator<<=(Float);
void operator<<=(Double);
void operator<<=(const char*); // Unbounded string.
void operator<<=(const Any&);
void operator<<=(const TypeCode_ptr&);
void operator<<=(Object_ptr);
void operator<<=(from_boolean);
void operator<<=(from_octet);
void operator<<=(from_char);
```

Description Inserts a value of the indicated type into an Any.

Any previous value held by the Any will be properly deallocated. Each operator<<=() takes a copy of the value being inserted (in the case of an object reference, _duplicate() is used). The Any is then responsible for memory management of the copy.

The insertion function operator<<=(const char* s) assumes that the value passed in s is an unbounded string. A bounded string must be inserted into an existing Any using the function CORBA::Any::replace().

The C++ mapping for IDL types boolean, octet and char cannot be distinguished for the purpose of function overloading. Therefore, the 'helper' types CORBA::Any::from_boolean, CORBA::Any::from_octet, and CORBA::Any::from_char serve to distinguish these types.

You can use this as follows:

```
// C++
CORBA::Octet o = 030;
CORBA::Any a;

// To insert an octet into an Any:
a <<= CORBA::Any::from_octet(o);

// An octet cannot be inserted as follows:
a <<= o; // This will not compile.
```

An attempt to insert an `unsigned char` value into an `Any` results in a compile-time error.

To insert a user-defined type into an `Any`, the IDL source file must be compiled with the `-A` switch. An appropriate `operator<<=()` is then generated from the IDL definition. For example, for the definition

```
// IDL
struct AStruct {
   string str;
   float number;
};
```

the following operator is generated:

```
// C++
void operator<<=(CORBA::Any& a, const AStruct& t);
```

This can be used as follows:

```
// C++
CORBA::Any a;
AStruct s;
// Initialise s.
a <<= s;
```

Parameters `operator<<=(const char* s)` copies its parameter, `s`;
`operator<<=(CORBA::Object_ptr t)` duplicates its object reference, `t`.

Notes CORBA compliant.

See Also `CORBA::Any::replace()`

CORBA::Any::operator>>=()

Synopsis

```
Boolean operator>>=(Short&) const;
Boolean operator>>=(Long&) const;
Boolean operator>>=(LongLong);
Boolean operator>>=(UShort&) const;
Boolean operator>>=(ULong&) const;
Boolean operator>>=(ULongLong);
Boolean operator>>=(Float&) const;
Boolean operator>>=(Double&) const;
Boolean operator>>=(char*&) const;
Boolean operator>>=(Any&) const;
Boolean operator>>=(TypeCode_ptr&) const;
Boolean operator>>=(Object_ptr&) const;
Boolean operator>>=(to_boolean) const;
Boolean operator>>=(to_octet) const;
Boolean operator>>=(to_char) const;
```

Description

Extracts a value of the indicated type from an Any. You can determine the type of an Any by calling the member function CORBA::Any::type(), and you can extract the value using operator>>=().

You cannot distinguish the C++ mapping for IDL types boolean, octet and char for the purpose of function overloading. Therefore, the 'helper' types CORBA::Any::to_boolean, CORBA::Any::to_octet, and CORBA::Any::to_char serve to distinguish these types. You can use this as follows:

```
// C++
CORBA::Octet o;
CORBA::Any a = ...;

// How to extract an octet from an Any.
if (a >>= CORBA::Any::to_octet(o)) ...

// An octet cannot be extracted as follows:
if (a >>= o) ... // This will not compile.
```

An attempt to extract an unsigned char value from an Any results in a compile-time error.

To extract a user-defined type from an Any, you must compile the IDL source file with the -A switch. An appropriate operator>>=() is then generated from the IDL definition.

For example, the definition:

```
// IDL
struct Details {
   string name;
};
```

results allows struct `Details` to be extracted as follows:

```
// C++
CORBA::Any a;
Details* d;
if(a >>= d) {
   ...
}
```

If the extraction is successful, the caller's pointer, `d`, points to a copy of the value inserted into the `Any`, and `operator>>=()` returns `1`. Note that:

- The `Any` is responsible for the memory management of the value. The caller must not try to delete or otherwise release this storage.
- The caller should not use the storage after the `Any` has been deallocated.
- You should avoid using `_var` types with the extraction operators, because they try to assume ownership of the storage owned by the `Any`.

Return Value These operators return `1` if the `Any` contains a value of the appropriate type; otherwise they return `0` (and set their parameter to an appropriate zero value). The value `0` is also returned if the `Any` does not contain a value.

Notes CORBA compliant.

CORBA::Any::replace()

Synopsis

```
void replace(TypeCode_ptr type, void* val,
   Boolean release = 0);
```

Description This member function is needed for cases where it is not possible to use `operator<<=()` to insert into an existing `Any`. For example, because all strings are mapped to `char*`, it is not possible to create an `Any` with a specific `TypeCode` for a bounded string.

Note: This function is not type-safe; you must ensure consistency between the TypeCode and the actual type of the argument `val`.

Parameters

`type`	A reference to a `CORBA::TypeCode`. The function duplicates this object reference.
`val`	The value pointer. A conforming program should make no assumptions about the lifetime of the value passed in this parameter if it has been passed to `Any::replace()` with `release=1`.
`release`	A boolean variable to decide ownership of the storage pointed to by `val`. If set to `1`, the `Any` object assumes ownership of the storage. If the `release` parameter is set to `0` (the default), the calling program is responsible for managing the memory pointed to by `val`.

Notes CORBA compliant.

See Also `CORBA::Any::operator<<=()`

CORBA::Any::type()

Synopsis

```
TypeCode_ptr type() const;
```

Description Returns a reference to the TypeCode associated with the Any.

Return Value The caller must release the reference when it is no longer needed, or assign it to a TypeCode_var variable for automatic management.

Notes CORBA compliant.

See Also `CORBA::Any::operator<<=()`
`CORBA::Any::operator>>=()`

CORBA::Any::value()

Synopsis `void* value() const;`

Description Returns a pointer to the actual value stored in the `Any`. The exact nature of the returned value depends on the type of the value as shown below:

IDL Type	value()
`void`	`0` (zero)
`boolean`	`CORBA::Boolean*`
`char`	`CORBA::Char*`
`octet`	`CORBA::Octet*`
`short`	`CORBA::Short*`
`unsigned short`	`CORBA::UShort*`
`long`	`CORBA::Long*`
`unsigned long`	`CORBA::ULong*`
`long long`	`CORBA::LongLong*`
`unsigned long long`	`CORBA::ULongLong*`
`float`	`CORBA::Float*`
`double`	`CORBA::Double*`
`any`	`CORBA::Any*`
`Object`	`CORBA::Object_ptr*`
`TypeCode`	`CORBA::TypeCode_ptr*`
`NamedValue`	`CORBA::NamedValue_ptr*`
Object reference of interface `I`.	`I_ptr*`
`InterfaceDescription`	`CORBA::InterfaceDescription_ptr*`
`OperationDescription`	`CORBA::OperationDescription_ptr*`

IDL Type	value()
AttributeDescription	CORBA::AttributeDescription_ptr*
ParameterDescription	CORBA::ParameterDescription_ptr*
RepositoryDescription	CORBA::RepositoryDescription_ptr*
ModuleDescription	CORBA::ModuleDescription_ptr*
ConstDescription	CORBA::ConstDescription_ptr*
ExceptionDescription	CORBA::ExceptionDescription_ptr*
TypeDescription	CORBA::TypeDescription_ptr*
FullInterfaceDescription	CORBA::FullInterfaceDescription_ptr*
Sequences of any of the above types.	Pointer to sequence.
struct	Pointer to struct.
string	char**
fixed	Pointer to fixed.
array	Pointer to array slice.

Notes CORBA compliant.

See Also CORBA::Any::type()

CORBA::AuthenticationFilter

Synopsis `CORBA::AuthenticationFilter` is a derived class of class `CORBA::Filter`; it is used to pass authentication information between processes. The default implementation transmits the name of the principal (user name) to the server when the channel between the client and the server is first established and adds it to all requests at the server side.

You can override the default authentication filter by declaring a derived class of `CORBA::AuthenticationFilter` and then creating an instance of this class.

The authentication filter is always the first filter in a filter chain.

Orbix

```
// C++
class AuthenticationFilter : public CORBA::Filter {
   AuthenticationFilter();
};
```

Notes Orbix specific.

See Also `CORBA::Filter`
`CORBA::ThreadFilter`

CORBA::AuthenticationFilter:: AuthenticationFilter()

Synopsis

```
AuthenticationFilter();
```

Description You cannot create direct instances of `AuthenticationFilter`: the constructor is protected to enforce this.

Notes Orbix specific.

CORBA::BOA

Synopsis

Class CORBA::BOA is a derived class of CORBA::ORB that implements the OMG CORBA BOA pseudo interface, and adds a number of functions specific to Orbix. BOA stands for "Basic Object Adapter".

CORBA::BOA provides functions that control Orbix from the server. These include functions to:

- Activate and deactivate servers.
- Activate and deactivate objects.
- Create and interpret object references.

The functions on this class are invoked through the CORBA::Orbix object on the server; this is a static object of class CORBA::BOA.

CORBA

```
// Pseudo IDL
pseudo interface BOA (
   Object create(in ReferenceData id,
      in InterfaceDef intf,
      in ImplementationDef impl);
   void dispose(in Object obj);
   ReferenceData get_id(in Object obj);
   void change_implementation(in Object obj,
      in ImplementationDef impl);
   Principal get_principal(in Object obj,
      in Environment env);
   void impl_is_ready(in Object obj,
      in ImplementationDef impl);
   void deactivate_impl(
      in ImplementationDef impl);
   void obj_is_ready(in ImplementationDef impl);
   void deactivate_obj(in Object obj);
};
```

Orbix

```
// C++
class BOA : public ORB {
public:
   Object_ptr create(const ReferenceData& id,
      InterfaceDef_ptr intf,
      ImplementationDef_ptr impl,
      Environment& env = default_environment);

   ReferenceData* get_id(const Object_ptr,
      Environment& env = default_environment);

   void dispose(Object_ptr,
      Environment& env = default_environment) ;

   void change_implementation(Object_ptr obj,
      ImplementationDef_ptr impl,
      Environment& env = default_environment);

   Principal_ptr get_principal(Object_ptr obj,
      Environment& env = default_environment);

   Principal_ptr get_principal(
      Environment& env = default_environment) ;

   Status processNextEvent(
      ULong timeOut=DEFAULT_TIMEOUT,
      Environment& env = default_environment);

   Status processEvents(ULong timeOut = DEFAULT_TIMEOUT,
      Environment& env = default_environment);

   Boolean isEventPending(
      Environment& env = default_environment) const;

   Boolean anyClientsConnected() const;
   Boolean setNoHangup(Boolean);

#ifdef WANT_ORBIX_FDS
   fd_set getFileDescriptors() const;
#endif
```

```
void impl_is_ready(
   ImplementationDef_ptr serverName = "",
   ULong timeOut=DEFAULT_TIMEOUT,
   Environment& env = default_environment);

void impl_is_ready(
   ImplementationDef_ptr serverName,
   Environment& env);

void impl_is_ready(Environment& env);

void deactivate_impl(
   ImplementationDef_ptr,
   Environment &env=default_environment);

void obj_is_ready(
   Object_ptr obj,
   ImplementationDef_ptr impl,
   Environment& env);

void obj_is_ready (Object_ptr obj,
   ImplementationDef_ptr impl,
   ULong timeOut = DEFAULT_TIMEOUT,
   Environment& env = default_environment);

void deactivate_obj(Object_ptr,
   Environment& env = default_environment);

void continueThreadDispatch(Request&);

const char* myImpRepPath(
   Environment& env = default_environment) const;

const char* myIntRepPath(
   Environment& env = default_environment) const;

const char* myImplementationName(
   Environment& env = default_environment) const;
const char* myMarkerName(
   Environment& env = default_environment) const;
```

```
    const char* myMethodName(
       Environment& env = default_environment) const;

    enum activationMode {
       perMethodActivationMode, unsharedActivationMode,
       persistentActivationMode, sharedActivationMode,
       unknownActivationMode};

    activationMode myActivationMode(
       Environment& env = default_environment);

    Boolean propagateTIEdelete(
       Boolean,
       Environment& env = default_environment);

    Boolean filterBadConnectAttempts(
       Boolean,
       Environment& env = default_environment);

    Boolean enableLoaders(
       Boolean,
       Environment& env = default_environment);

    Filter* getFilter();

    static void setImpl(const char* interfaceName,
       DynamicImplementation& rDSISkeleton,
       const char* pMarkerServer = "",
       LoaderClass* pLoader = 0 );
};
```

Notes CORBA compliant.

See Also `CORBA::ORB`

CORBA::BOA::activationMode

Synopsis

```
enum activationMode {
   perMethodActivationMode,
   unsharedActivationMode,
   persistentActivationMode,
   sharedActivationMode,
   unknownActivationMode
};
```

Description Enumerates the activation modes for launching servers.

Notes Orbix specific.

See Also `CORBA::BOA::myActivationMode()`

CORBA::BOA::anyClientsConnected()

Synopsis

```
Boolean anyClientsConnected() const;
```

Description Determines if there are any connections from clients to the server.

Return Value Returns `true` if any clients are connected; returns `false` otherwise.

Notes Orbix specific.

CORBA::BOA::change_implementation()

Synopsis

```
void change_implementation(Object_ptr obj,
   ImplementationDef_ptr impl,
   Environment& env = default_environment);
```

Description Changes the implementation (server name) associated with the object `obj`. You can use this function to overcome the problem of exporting an object reference from a persistent server before `impl_is_ready()` is called.

You can use the function `CORBA::ORB::setServerName()` to change the implementation for all objects created by a server.

Note: If a server creates an object and clients then invoke on this object, subsequent invocations on the object may fail following a call to `CORBA::BOA::change_implementation()` on that object.

Parameters

`obj`	The object reference for which the implementation is to be changed.
`impl`	The name of the new implementation (server).

Notes CORBA compliant. This function is included for compliance with the CORBA specification. You are unlikely to need to use it.

See Also
`CORBA::BOA::impl_is_ready()`
`CORBA::ORB::setServerName()`

CORBA::BOA::continueThreadDispatch()

Synopsis
```
void continueThreadDispatch(Request& req);
```

Description A per-process filter can create a thread to handle an incoming request. The function `continueThreadDispatch()` requests Orbix to continue processing request `req` in the context of a newly-created thread.

Notes Orbix specific. This function requires Multi-Threaded Orbix (Orbix-MT).

See Also
`CORBA::Filter`
`CORBA::ThreadFilter`

CORBA::BOA::create()

Synopsis
```
Object_ptr create(
   const ReferenceData& id,
   InterfaceDef_ptr intf,
   ImplementationDef_ptr impl,
   Environment& env = default_environment);
```

Description Creates a new object reference. Note that this function does not create an implementation object. As such, it makes little sense to use it unless an implementation object exists in the server or an appropriate loader is installed.

Parameters

`id`	Opaque identification information, supplied by the caller, and stored in an object. This is an IDL sequence of octets which, in Orbix, is mapped to the object marker.
`intf`	The Interface Repository object that specifies the set of interfaces implemented by the object.
`impl`	The Implementation Repository entry (server name) that specifies the implementation to be used for the object.

Exceptions If the `id` does not match the marker of an object currently resident (or loaded into) the server's address space, `CORBA::BOA::create()` raises a `CORBA::INV_OBJREF` exception.

Notes CORBA compliant. This function is included for compliance with the CORBA specification. You are unlikely to need to use it.

See Also
`CORBA::Object::Object()`
`CORBA::ORB::string_to_object()`
`CORBA::LoaderClass`

CORBA::BOA::deactivate_impl()

Synopsis

```
void deactivate_impl(ImplementationDef_ptr impl,
   Environment& env = default_environment);
```

Description A server that has called `impl_is_ready()` to indicate that it has completed initialization and is ready to receive requests, may subsequently indicate to Orbix that it wishes to discontinue receiving requests. It does so by calling `deactivate_impl()`, and passing the server name in the parameter `impl`. Calling `deactivate_impl()` causes `impl_is_ready()` to return.

Note: The `deactivate_impl()` function does not end the `impl_is_ready()` loop. It only ends the event loop on either an incoming or outgoing request. `deactivate_impl()` sets a flag that is checked once per event dispatch.

Notes CORBA compliant.

See Also `CORBA::BOA::impl_is_ready()`
`CORBA::ImplementationDef`

CORBA::BOA::deactivate_obj()

Synopsis

```
void deactivate_obj(Object_ptr obj,
   Environment& env = default_environment);
```

Description A server (running in unshared activation mode) that has called `obj_is_ready()` to indicate that it has completed initialization and is ready to receive requests, may subsequently indicate to Orbix that it wishes to discontinue receiving requests for this object. It does so by calling `deactivate_obj()`, and passing the object whose marker caused the server process to be launched, in the parameter `obj`.

Notes CORBA compliant.

See Also `CORBA::BOA::obj_is_ready()`

CORBA::BOA::dispose()

Synopsis

```
void dispose(Object_ptr obj,
   Environment& env = default_environment) const;
```

Description Invalidates the object reference `obj`.

Notes CORBA compliant. This function is included for compliance with the CORBA specification. You are unlikely to need to use it.

See Also `CORBA::release()`

CORBA::BOA::enableLoaders()

Synopsis

```
Boolean enableLoaders(Boolean value,
   Environment& env = default_environment);
```

Description It is occasionally useful to disable the loaders for a period. If, when binding to an object, the caller knows that the object is already loaded *if* it exists, it may be advisable to avoid involving the loaders if the object cannot be found.

By default, loaders are enabled.

Parameters

`value`	A `true` value enables loaders; `false` disables loaders.

Return Value Returns the previous setting.

Notes Orbix specific.

See Also `CORBA::LoaderClass`

CORBA::BOA::filterBadConnectAttempts()

Synopsis

```
Boolean filterBadConnectAttempts(Boolean value,
   Environment& env = default_environment);
```

Description By default, an exception is raised if a bad connection is made to a server waiting on the `CORBA::BOA::impl_is_ready()`, `CORBA::BOA::obj_is_ready()`, and `CORBA::BOA::processEvents()` functions. Such bad connection attempts can be caused, for example, by a connection attempt from an old version of Orbix (version 1.2 or earlier).

If you want to have Orbix silently handle such attempts without raising an exception to `CORBA::BOA::impl_is_ready()`, `CORBA::BOA::obj_is_ready()`, or `CORBA::BOA::processEvents()`, you can call `filterBadConnectAttempts()` passing `true` for the parameter `value`.

Return Value Returns the previous setting. The default is disabled (that is, by default, bad connection attempts cause a `CORBA::COMM_FAILURE` exception to be raised).

Notes Orbix specific.

CORBA::BOA::get_id()

Synopsis

```
ReferenceData* get_id(Object_ptr obj,
   Environment& env = default_environment);
```

Description Returns the identification information of the object `obj` as set in `CORBA::BOA::create()`.

Notes CORBA compliant. This function is included for compliance with the CORBA specification. You are unlikely to need to use it.

See Also

`CORBA::BOA::create()`
`CORBA::Object::_marker()`

CORBA::BOA::get_principal()

Synopsis

```
Principal_ptr get_principal(
   Environment& env = default_environment);
Principal_ptr get_principal(Object_ptr ignored,
   Environment& env = default_environment);
```

Description A server application can call either of these member functions when processing an operation call from a client. These member functions return the user name of the client process that made the current operation call.

Parameters

`ignored`	This parameter is ignored. It is supported for compatibility with CORBA.

env — This must be the Environment passed to a server member function by Orbix. For example:

```
// C++
Account_ptr Bank_i::newAccount(const
char* name,
   CORBA::Environment& pe) {
   ...
   char* principal =
CORBA::Orbix.get_principal(pe);
   ...
}
```

The following incorrect code returns a null pointer for the principal because the env parameter passed to get_principal() is not the Environment passed by the client:

```
// C++
Account_ptr Bank_i::newAccount(const
char* name,
   CORBA::Environment& pe) {
   CORBA::Environment_ptr env;
   CORBA::create_environment(env);
   ...
   try {  // Incorrect use of
          // get_principal().
     char* principal =
     CORBA::Orbix.get_principal(env);
   }
   ...
}
```

Notes The function get_principal(CORBA::Object_ptr ignored) is CORBA compliant. The function get_principal() is Orbix specific.

See Also CORBA::Principal

CORBA::BOA::getFileDescriptors()

Synopsis

```
#include <sys/types.h>
#ifdef WANT_ORBIX_FDS
fd_set getFileDescriptors() const;
#endif
```

Description Gets the set of file descriptors scanned by Orbix to detect incoming events. When using libraries or systems that depend on the UNIX `select()` system call you may need to know which file descriptors are scanned by Orbix.

Note: This function is defined only if the following preprocessor directive is issued in the C++ file before including `CORBA.h`:
`#define WANT_ORBIX_FDS`

Return Value Returns a set of file descriptors.

Notes Orbix specific.

See Also `CORBA::Object::_fd()`

CORBA::BOA::getFilter()

Synopsis

```
Filter_ptr getFilter();
```

Description Gets the first per-process filter (if any) in the chain of filters associated with the server process.

Return Value Returns a pointer to the first filter object in the chain, if any.

Notes Orbix specific.

See Also `CORBA::Filter`

CORBA::BOA::impl_is_ready()

Synopsis

```
void impl_is_ready(
   Environment& env = default_environment);
void impl_is_ready(ImplementationDef_ptr serverName,
   Environment& env = default_environment);
void impl_is_ready(
   ImplementationDef_ptr serverName = "",
   ULong timeOut = DEFAULT_TIMEOUT,
   Environment& env = default_environment);
```

Description

Once a server is registered with Orbix, a process is automatically launched to run it if an operation is invoked on one of its objects. Once launched, the server should initialize itself, creating any objects it requires, and it should then call `CORBA::Orbix.impl_is_ready()` to indicate that it has completed its initialization and is ready to receive operation requests on its objects.

The `impl_is_ready()` function normally does not return immediately; it blocks the server until an event occurs, handles the event, and re-blocks the server to await another event. (The functions `CORBA::BOA::ProcessEvents()` and `CORBA::BOA::ProcessNextEvent` provide alternative ways of handling events.)

The `impl_is_ready()` function returns only when:

- A time-out occurs. A server can time out either because it has no clients for the timeout duration, or because none of its clients use it for that period.
- An exception occurs while waiting for or processing an event.
- The function `CORBA::BOA::deactivate_impl()` is called.

A persistent server (one that is run manually rather than being launched by Orbix) should call the `impl_is_ready()` function *before* it has any interaction with Orbix. For example, a persistent server should not pass out an object reference for one of its objects (for example, as a parameter or return value, or even by printing it) until `impl_is_ready()` is called. Such an object reference would not have the correct server name since Orbix has no way of determining this before `impl_is_ready()` is called.

Note: The implementation of `impl_is_ready()` inserts the correct server name into the object names of the server's objects, but it cannot do so for any object references that have already been passed out of the address space.

Other interactions with Orbix, such as calling an operation on a remote object, or using the locator, also cause difficulties if they occur in a persistent server before `impl_is_ready()` is called. You can circumvent this problem by calling the `CORBA::ORB::setServerName()` function on the `CORBA::Orbix` object before making external calls.

Persistent servers, once they have called `impl_is_ready()` behave as shared activation mode servers. However, if a server is registered as unshared or per-method, then, as required by the CORBA specification, `impl_is_ready()` fails if the server is launched manually.

Normally, a server must be registered in the Implementation Repository (using `putit` or the Orbix Server Manager GUI utility) before it can call `impl_is_ready()`. However, if the `-u` switch is specified to the `orbixd` daemon, a persistent server can call `impl_is_ready()` without being registered.

Parameters

`server_name`	The `server_name` parameter is optional if the server is launched by Orbix; it is required if the server is launched manually or externally to Orbix (that is, for a CORBA persistent server). It is recommended, therefore, that you specify the `server_name` parameter. If you specify the `server_name` parameter, it must be exactly the server name with which the server was registered. The `server_name` parameter need not be the name of a class or interface; it is the name of a server, registered with the Implementation Repository. If you do not wish to specify the `server_name`, but wish to specify a non-default `timeOut` (or `Environment`), you should pass a zero length string ("") as the value of the `name` parameter.

`timeOut`	Indicates the number of milliseconds to wait between events; a time-out occurs if Orbix has to wait longer than the specified timeout for the next event. A time-out of zero indicates that `impl_is_ready()` should time out and return immediately *without* checking if there is any pending event. A time-out does not cause `impl_is_ready()` to raise an exception. You can pass the default time-out explicitly as `CORBA::Orbix.DEFAULT_TIMEOUT`. You can spacify an infinite time-out by passing `CORBA::Orbix.INFINITE_TIMEOUT`. The `timeOut` parameter is meaningless for the per-method call activation mode, since the process terminates once the operation call that caused it to be launched has completed.

Notes The member function `CORBA::BOA::impl_is_ready(ImplementationDef server_name)` is CORBA compliant. The overloaded alternatives are Orbix specific.

See Also
`CORBA::BOA::deactivate_impl()`
`CORBA::BOA::obj_is_ready()`
`CORBA::BOA::processEvents()`
`CORBA::BOA::processNextEvent()`
`CORBA::ORB::setServerName()`

CORBA::BOA::isEventPending()

Synopsis
```
Boolean isEventPending(
   Environment& env = default_environment) const;
```

Description Tests whether or not there is an outstanding event, that is whether or not `CORBA::BOA::processNextEvent()` would block the server for a period.

Return Value Returns `true` if there is a pending event, returns `false` otherwise.

Notes Orbix specific.

See Also `CORBA::BOA::processNextEvent()`

CORBA::BOA::myActivationMode()

Synopsis

```
activationMode myActivationMode(
   Environment& env = default_environment);
```

Description Determines the fundamental activation mode with which the server was launched: shared, unshared, persistent, or per-method.

Return Value Returns the activation mode.

Exceptions If called within a client application, it raises the `CORBA::NO_IMPLEMENT` exception and returns `unknownActivationMode`.

Notes Orbix specific.

See Also `CORBA::BOA::activationMode`

CORBA::BOA::myImplementationName()

Synopsis

```
const char* myImplementationName(
   Environment& env = default_environment) const;
```

Description Finds the server's name as registered in the Implementation Repository. For a persistent server, the contents of the string are unspecified until `CORBA::BOA::impl_is_ready()`, `CORBA::BOA::obj_is_ready()` or `CORBA::ORB::setServerName()` is called.

Notes Orbix specific.

See Also `CORBA::ORB::impl_is_ready()`
`CORBA::ORB::setServerName()`

CORBA::BOA::myImpRepPath()

Synopsis

```
const char* myImpRepPath(
   Environment& env = default_environment) const;
```

Description Finds the path name of the Implementation Repository directory in which the server is registered.

Notes Orbix specific.

CORBA::BOA::myIntRepPath()

Synopsis

```
const char* myIntRepPath(
   Environment& env = default_environment) const;
```

Description Finds the name of the directory used to store information about the interfaces in the Interface Repository. This directory contains the appropriate information if the `-R` switch was passed to the IDL compiler.

Notes Orbix specific.

CORBA::BOA::myMarkerName()

Synopsis

```
const char* myMarkerName(
   Environment& env = default_environment) const;
```

Description Finds the marker name of the activation object that caused the server to be launched. For a persistent or a per-method server, this marker name is `"*"`.

Notes Orbix specific.

See Also `CORBA::BOA::myMarkerPattern()`

CORBA::BOA::myMarkerPattern()

Synopsis

```
const char* myMarkerPattern(
   Environment& env = default_environment);
```

Description Finds the marker pattern that the activation object matched in the Implementation Repository and hence caused this server to be launched.

For a persistent or per-method server, this pattern is `"*"`.

Marker patterns are explained in the *Orbix C++ Administrator's Guide*.

Notes Orbix specific.

See Also `CORBA::BOA::myMarkerName()`

CORBA::BOA::myMethodName()

Synopsis

```
const char* myMethodName(
   Environment& env = default_environment) const;
```

Description Finds the method that caused server to be launched. For a non per-method server, this value is null.

Notes Orbix specific.

CORBA::BOA::obj_is_ready()

Synopsis

```
void obj_is_ready(Object_ptr obj,
   ImplementationDef_ptr impl,
   Environment& env = default_environment);
void obj_is_ready(Object_ptr obj,
   ImplementationDef_ptr impl,
   ULong timeOut = DEFAULT_TIMEOUT,
   Environment& env = default_environment);
```

Description A server running in the unshared activation mode (that is, with one registered object per process) may call the `CORBA::BOA::obj_is_ready()` function on the `CORBA::Orbix` object to indicate that it has completed its initialization. The server remains active and will receive requests for its registered object until:

- It calls `CORBA::BOA::deactivate_obj()`.
- The call to `obj_is_ready()` times out.
- An exception is raised.

Parameters

`obj`	The registered object that the process manages.
`impl`	The server name.
`timeOut`	The time-out period. A server can time out either because it has no clients for the time-out duration, or because none of its clients use it for that period. The default time-out is given by `CORBA::Orbix::DEFAULT_TIMEOUT`. An infinite time-out is specified by `CORBA::Orbix::INFINITE_TIMEOUT`.

Notes `CORBA::BOA::obj_is_ready(ObjectRef obj, ImplementationDef impl)` is CORBA compliant. The overloaded alternative is Orbix specific.

See Also `CORBA::BOA::deactivate_obj()`
`CORBA::BOA::impl_is_ready()`

CORBA::BOA::processEvents()

Synopsis

```
Status processEvents(ULong timeOut = DEFAULT_TIMEOUT,
   Environment& env = default_environment);
```

Description There are three kinds of Orbix events:

- Operation requests
- Connections from clients
- Disconnections of clients

If a zero time-out period is given to `CORBA::BOA::impl_is_ready()` or `CORBA::BOA::obj_is_ready()`, when invoked on the `CORBA::Orbix` object, the call returns immediately—allowing a program to subsequently state at what points it is willing to accept incoming Orbix events.

The function `processEvents()` blocks the server until an event arrives, handles the event, and continues to process events, until none arrives within the time-out period. It has the same effect as calling `CORBA::BOA::processNextEvent()` repeatedly until it times out.

The function `processEvents()` is similar in functionality to `impl_is_ready()` (or `obj_is_ready()`) because it processes any number of events until it times out. However, use of `processEvents()` does not initialize the server and therefore does not fulfil a server's requirement to call `impl_is_ready()` (or `obj_is_ready()`).

One example of using `processEvents()` is where a manually-launched server wishes to interact with Orbix (for example, by calling a remote operation or by passing out or printing an object reference for one of its objects) before it is ready to handle events. Before it interacts with Orbix, it must call `impl_is_ready()` (or `obj_is_ready()`), in this case with a zero time-out, and then call `processEvents()` when it is ready to handle events. Alternatively, before it interacts with Orbix it may call `CORBA::ORB::setServerName()` and then call `processEvents()`.

Parameters

`timeOut`	Indicates how long (in milliseconds) the server should be blocked. A time-out of zero indicates that `processEvents()` should not block; it returns immediately if there is no waiting event.

Return Value Normally returns `0` (false). Returns `1` (true) if an exception occurs while waiting for or processing an event or if the ORB has been deactivated.

Notes Orbix specific.

See Also
```
CORBA::BOA::processNextEvent()
CORBA::BOA::impl_is_ready()
CORBA::BOA::obj_is_ready()
CORBA::ORB::setServerName()
```

CORBA::BOA::processNextEvent()

Synopsis
```
Status processNextEvent(ULong timeOut = DEFAULT_TIMEOUT,
   Environment& env = default_environment);
```

Description You may wish to have more control over the handling of events in a server. There are three kinds of events:

- Operation requests
- Connections from clients
- Disconnections of clients

This function blocks the server until an event arrives, handles that one event, and normally returns zero.

If a zero time-out period is given to `CORBA::BOA::impl_is_ready()` or `CORBA::BOA::obj_is_ready()`, the call returns immediately—allowing a program to subsequently state at what points it is willing to accept incoming Orbix events. You can do this by calling `CORBA::Orbix.processNextEvent()`.

Parameters

`timeOut`	Indicates how long (in milliseconds) the server should be blocked. A time-out of zero indicates that `processNextEvent()` should not block; it returns immediately if there is no waiting event.

Return Value Normally returns `0` (false). Returns `1` (true) if an exception occurs while waiting for or processing an event or if the ORB has been deactivated.

Notes Orbix specific.

See Also
```
CORBA::BOA::processEvents()
CORBA::BOA::impl_is_ready()
CORBA::BOA::obj_is_ready()
CORBA::BOA::deactivate_impl()
```

CORBA::BOA::propagateTIEdelete()

Synopsis
```
Boolean propagateTIEdelete(Boolean value,
   Environment& env = default_environment);
```

Description By default, deletion of a TIE (calling `CORBA::release()` on a TIE with a reference count of one) results in the deletion of the implementation object pointed to by the TIE.

Normally this is the required behaviour, but if not, you should call `propagateTIEdelete(false)` on the `CORBA::Orbix` object to ensure that the implementation object is *never* deleted by Orbix.

You can specify more than one TIE for the same implementation object. When any of these TIEs is deleted, the implementation object itself is, by default, deleted. You may wish to call `propagateTIEdelete(false)` to ensure that this does not happen.

Note: If you are using multiple TIEs to a single object, when `propagateTIEdelete(true)` is in force, you should be aware that deletion of any one of these TIEs leaves the other TIEs dangling.

Return Value This function returns the previous setting. The default setting is `true`; that is, the implementation object is deleted when the TIE object is deleted.

Notes Orbix specific.

CORBA::BOA::setImpl()

Synopsis

```
static void setImpl(const char* InterfaceName,
   DynamicImplementation& DSISkeleton,
   const char* MarkerServer = "",
   CORBA::LoaderClass* Loader = 0 );
```

Description Registers an instance of `CORBA::DynamicImplementation` to handle requests of a given interface.

Parameters

`InterfaceName`	The fully-scoped name of an interface that this `DynamicImplementation` object handles.
`DSISkeleton`	An instance of `CORBA::DynamicImplementation` that handles requests for the interface specified in `InterfaceName`.
`MarkerServer`	Allows an object (or set of objects) to be specified such that this `DynamicImplementation` object handles only that object (or set of objects). The parameter has the format `marker:server`. If you specify no server, the server name defaults to the name specified in `InterfaceName`. If you specify no marker, this `DynamicImplementation` object handles all objects within the specified (or defaulted) server.
`Loader`	A pointer to a loader for instances of the interface specified in `InterfaceName`.

Notes CORBA compliant.

See Also `CORBA::DynamicImplementation`

CORBA::BOA::setNoHangup()

Synopsis

```
Boolean setNoHangup(Boolean value);
```

Description

By default, the `CORBA::BOA::impl_is_ready()` and `CORBA::BOA::obj_is_ready()` functions time out when a period (user-defined or defaulted) has elapsed between events. An event is an incoming operation call or the connection or disconnection by a client.

This means that `impl_is_ready()` and `obj_is_ready()` can time out when clients are idle for a period. If a server is to remain active while it has any clients, active or not, it can call the function `setNoHangup(true)` on the `CORBA::Orbix` object.

Parameters

`value` When `setNoHangup(true)` is called, the time-out period to `impl_is_ready()` and `obj_is_ready()` specifies the amount of time a server remains waiting while there are no client connections to it. When `setNoHangup(false)` is called, the time-out period to `impl_is_ready()` and `obj_is_ready()` specifies the amount of time a server remains waiting while there are no events (operation calls, connections, disconnections).

When set to `true`, `impl_is_ready()` and `obj_is_ready()` do not time out while there are clients connected to the server; when set to `false`, `impl_is_ready()` and `obj_is_ready()` can time out if the specified period elapses between events. The default is `false`.

Return Value Returns the previous setting.

Notes Orbix specific.

See Also

`CORBA::Environment::timeout()`
`CORBA::ORB::defaultTxTimeout()`

CORBA::Context

Synopsis

Class `CORBA::Context` implements the OMG pseudo-interface `Context`. A context is intended to represent information about the client that is inconvenient to pass via parameters.

An IDL operation can specify that it is to be provided with the client's mapping for particular identifiers (properties)—it does this by listing these identifiers following the operation declaration in a `context` clause. An IDL operation that specifies a `context` clause is mapped to a C++ member function that takes an extra input parameter of type `Context_ptr`, just before the `Environment` parameter. A client can optionally maintain one or more CORBA `Context` objects, which provide a mapping from identifiers (string names) to string values. A `Context` object contains a list of properties; each property consists of a name and a string value associated with that name and can be passed to a function that takes a `Context` parameter.

You can be arrange `Context`s in a hierarchy by specifying parent-child relationships among them. Then, a child passed to an operation also includes the identifiers of its parent(s). The called function can decide whether to use just the context actually passed, or the hierarchy above it.

CORBA

```
// Pseudo IDL
pseudo interface Context {
   readonly attribute Identifier context_name;
   readonly attribute Context parent;

   Status create_child(
      in Identifier child_ctx_name, out Context child_ctx);

   Status set_one value(
      in Identifier propname, in any propvalue);
   Status set_values(in NVList values);
   Status delete_values(in Identifier propname);
   Status get_values(in Identifier start_scope,
      in Flags op_flags,
      in Identifier pattern,
      out NVList values);
};
```

Orbix

```
// C++
class Context {
public:
   Status set_one_value(const char* prop_name,
      const Any& value,
      Environment& env = default_environment);

   Status set_values(NVList_ptr values,
      Environment& env = default_environment);

   Status get_values(const char* start_scope,
      Flags op_flags,
      const char* prop_name,
      NVList_ptr& values,
      Environment& env = default_environment) ;

   Status delete_values(const char* prop_name,
      Environment& env = default_environment);

   Status create_child(const char* ctx_name,
      Context_ptr& child_ctx,
      Environment& env = default_environment);

   const char* context_name(
      Environment& env = default_environment) const;

   Context_ptr parent(
      Environment& env = default_environment) const;

   ORBStatus _delete (const CORBA::Flags &del_flags,
      Environment& env = default_environment);

   ULong get_count(
      Environment& env = default_environment) const;

   ULong get_count_all(
      Environment& env = default_environment) const;

   Context(Context* parent = 0);

   Context (const char* name, Context* parent=0);
```

```
    ~Context();

    void encode (Request&, char*) const;

    Context(Request&);

    static Context_ptr __stdcall IT_create(
       Context_ptr parent = 0,
       Environment& env = default_environment);

    static Context_ptr __stdcall IT_create(
       const char* name,
       Context_ptr parent = 0,
       Environment& env = default_environment);

    static Context_ptr __stdcall IT_create(
       Request& IT_r,
       Environment& env = default_environment);

    static Context_ptr __stdcall _duplicate(
       Context_ptr obj,
       Environment& env = default_environment);

    static Context_ptr __stdcall _nil(
       Environment& env = default_environment);
};
```

Notes CORBA compliant.

See Also `CORBA::ContextIterator`
`CORBA::NVList`
`CORBA::Flags`

CORBA::Context::Context()

Synopsis

```
Context(Context *parent = 0);
```

Description Creates a new context (possibly a child context).

Parameters

`parent`	The parent context, if any.

Notes Orbix specific. Refer to `CORBA::Context::create_child()` for a CORBA-compliant function to create a child `Context`.

See Also

`CORBA::Context::create_child()`
`CORBA::Context::IT_create()`

Other `Context` constructors.

CORBA::Context::Context()

Synopsis

```
Context(const char* name, Context *parent = 0);
```

Description Creates a new context (possibly a child context).

Parameters

`name`	The name of the context.
`parent`	The parent context, if any.

Notes Orbix specific. Refer to `CORBA::Context::create_child()` for CORBA-compliant function to create a child `Context`.

See Also

`CORBA::Context::create_child()`
`CORBA::Context::IT_create()`

Other `Context` constructors.

CORBA::Context::Context()

Synopsis `Context(Request&)`

Description Conversion from a `Request`.

Notes Orbix specific.

See Also `CORBA::Context::create_child()`
`CORBA::Context::IT_create()`

Other `Context` constructors.

CORBA::Context::~Context()

Synopsis
```
~Context();
```

Description Destructor.

Notes Orbix specific. Calling `CORBA::release()` on the `Context` is the CORBA compliant way to free a `Context` created using `IT_create()` or `create_child()`. The `release()` function frees child contexts.

See Also `CORBA::release()`

CORBA::Context::_duplicate()

Synopsis
```
static Context_ptr _duplicate(
   Context_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns a reference to self.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::Context::_nil()

Synopsis

```
static Context_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for a `Context` object.

Notes CORBA compliant.

See Also `CORBA::is_nil()`

CORBA::Context::context_name()

Synopsis

```
const char* context_name(
   Environment& env=default_environment) const;
```

Description Returns the name of the `Context` object.

See Also `CORBA::Context::create_child()`

CORBA::Context::create_child()

Synopsis

```
Status create_child(const char* ctx_name,
   Context_ptr& child_ctx,
   Environment& env = default_environment);
```

Description Creates a child context of the current context. When a child context is passed as a parameter to an operation, any searches (using `CORBA::Context::get_values()`) looks in parent contexts if necessary to find matching property names.

Parameters

`ctx_name`	The name of the child context. Context object names follow the rules for IDL identifiers.
`child_ctx`	The newly created context.

Return Value Returns `1` (true) if successful; returns `0` (false) otherwise.

Notes CORBA compliant.

See Also `CORBA::Context::get_values()`

CORBA::Context::delete_values()

Synopsis

```
Status delete_values(const char* prop_name,
   Environment& env = default_environment);
```

Description Deletes the specified property value(s) from the context. The search scope is limited to the `Context` object on which the invocation is made.

Parameters

`prop_name`	The property name to be deleted. If `prop_name` has a trailing '*', all matching properties are deleted.

Return Value Returns `1` (true) if successful; returns `0` (false) otherwise. An exception is raised if no matching property is found.

Notes CORBA compliant.

CORBA::Context::get_count()

Synopsis

```
Long get_count(
   Environment& env = default_environment) const;
```

Description Finds the number of property/value pairs in the context.

Notes Orbix specific.

See Also `CORBA::Context::get_count_all()`

CORBA::Context::get_count_all()

Synopsis

```
Long get_count_all(
   Environment& env = default_environment) const;
```

Description Finds the number of property/value pairs in this context and all its parent contexts.

Notes Orbix specific.

See Also `CORBA::Context::get_count()`

CORBA::Context::get_values()

Synopsis

```
Status get_values(
   const char* start_scope,
   const Flags op_flags,
   const char* prop_name,
   NVList_ptr& values,
   Environment& env = default_environment);
```

Description Retrieves the specified context property values.

Parameters

`start_scope`	The context in which the search for the values requested should be started. The name of a direct or indirect parent context may be specified to this parameter. If `0` is passed, the search begins in the context which is the target of the call.
`op_flags`	By default, searching of identifiers propagates upwards to parent contexts; if `CORBA::CTX_RESTRICT_SCOPE` is specified, then searching is limited to the specified search scope or context object.
`prop_name`	If `prop_name` has a trailing '`*`', all matching properties and their values are returned.
`values`	An `NVList` to contain the returned property values.

Return Value Returns `1` (true) if matching properties are found; returns `0` (false) otherwise.

Notes CORBA compliant.

CORBA::Context::IT_create()

Synopsis

```
static Context_ptr IT_create(
   Context_ptr parent=0,
   Environment& env = default_environment);
static Context_ptr IT_create(
   const char* name,
   Context_ptr parent=0,
   Environment& env = default_environment);
static Context_ptr IT_create(
   Request& IT_r,
   Environment& env = default_environment);
```

Description In the absence of a CORBA-specified way to create a (top level) `Context` pseudo object in the current standard C++ mapping, Orbix provides the `IT_create()` function to initialize an object reference for a `Context`.

Use of this function is recommended in preference to C++ operator `new` to ensure portablility across future Orbix versions and for memory management consistency.

Notes Orbix specific. Refer to `CORBA::Context::create_child()` for the CORBA compliant way to create a child `Context`.

See Also `CORBA::Context::create_child()`

`Context` constructors.

CORBA::Context::parent()

Synopsis

```
Context_ptr parent(
   Environment& env = default_environment) const;
```

Description Returns the parent of the `Context` object.

See Also `CORBA::Context::create_child()`

CORBA::Context::set_one_value()

Synopsis

```
Status set_one_value(const char* prop_name,
   const Any& value,
   Environment& env = default_environment);
```

Description Adds property name and value to context. Although the `value` member is of type `Any`, the type of the `Any` must be a string.

Parameters

`prop_name`	The name of the property to add.
`value`	The value of the property to add.

Return Value Returns `1` (true) if successful; returns `0` (false) otherwise.

Notes CORBA compliant.

See Also `CORBA::Context::set_values()`

CORBA::Context::set_values()

Synopsis

```
Status set_values(const NVList_ptr values,
   Environment& env = default_environment);
```

Description Sets one or more property values in the context. The previous value of the property, if any, is discarded.

Parameters

`values`	An `NVList` containing the `property_name:values` to add or change. In the `NVList`, the flags field must be set to zero, and the `TypeCode` associated with an attribute value must be `CORBA::_tc_string`.

Return Value Returns `1` (true) if successful; returns `0` (false) otherwise.

Notes CORBA compliant.

See Also `CORBA::Context::set_one_value()`

CORBA::ContextIterator

Synopsis Class `CORBA::ContextIterator` defines a C++ iterator class for `CORBA::Context`.

Orbix

```
// C++
class ContextIterator {
public:
   ContextIterator(const Context*);
   ~ContextIterator();

   char* operator()();
};
```

Notes Orbix specific.

See Also `CORBA::Context`

CORBA::ContextIterator::ContextIterator()

Synopsis

```
ContextIterator(const Context* context);
```

Description Constructor. Creates an iterator for `context`.

Notes Orbix specific.

CORBA::ContextIterator::~ContextIterator()

Synopsis

```
~ContextIterator();
```

Description Destructor.

Notes Orbix specific.

CORBA::ContextIterator::operator()()

Synopsis `char* operator()();`

Description The `i`th call, where `i` is even, returns the name of a property in the `Context`. Where `i` is odd, the `i`th call returns the value of a property in the `Context` whose name is that returned by the (`i-1`)th call

Notes Orbix specific.

CORBA::DynamicImplementation

Synopsis A server that uses the Dynamic Skeleton Interface (DSI) must create one or more objects that support the IDL interface `CORBA::DynamicImplementation` and register these objects with Orbix using `CORBA::BOA::setImpl()`.

CORBA

```
// IDL
pseudo interface DynamicImplementation {
   void invoke(inout ServerRequest request,
      inout Environment env);
```

Orbix

```
// C++
class DynamicImplementation {
public:
   virtual void invoke(ServerRequest& request,
      Environment& env,
      Environment& IT_env = default_environment) = 0;
protected:
   DynamicImplementation();
   virtual ~DynamicImplementation();
};
```

Notes CORBA compliant.

See Also

```
CORBA::ServerRequest
CORBA::BOA::setImpl()
```

CORBA::DynamicImplementation:: DynamicImplementation()

Synopsis

```
DynamicImplementation();
```

Description Default constructor.

Notes CORBA compliant.

CORBA::DynamicImplementation::~DynamicImplementation()

Synopsis

```
~DynamicImplementation();
```

Description Destructor.

Notes CORBA compliant.

CORBA::DynamicImplementation::invoke()

Synopsis

```
virtual void invoke(ServerRequest& request,
   Environment& env,
   Environment& IT_env = default_environment) = 0;
```

Description The `invoke()` function is informed of incoming operation and attribute requests to a server. An implementation of `invoke()` (in a derived class of `CORBA::DynamicImplementation`) is known as a Dynamic Implementation Routine (DIR).

Parameters

`request`	Contains details of the request to be invoked. This object is created by Orbix when it receives an incoming request and recognises it as one to be handled by the DSI: that is, an instance of `DynamicImplementation` has been registered to handle the target interface.
`env`	Contains the environment associated with the `request` parameter.
`IT_env`	May be used to return exception information when C++ exceptions are not supported by the compiler.

Notes CORBA compliant.

See Also `CORBA::ServerRequest`

CORBA::Environment

Synopsis

Class `CORBA::Environment` implements the OMG pseudo-interface `Environment`. You can use it to pass information between a client and a server. Where the C++ host compiler does not support C++ exception handling, you use it primarily transmit exceptions back to a caller via the default `CORBA::Environment` parameter. How you can use this parameter for exception handling is described in the *Orbix C++ Programmer's Guide*. When the C++ host compiler supports C++ exception handling, use of the default `Environment` parameter for exception handling is not CORBA compliant (as prescribed in the CORBA 2.0 C++ mapping). Where appropriate, the function descriptions below assume a non-exception handling compiler.

Whether or not the compiler supports exceptions, you can use this default parameter, in Orbix, to set a time-out value for remote calls and to pass security information.

CORBA

```
// Pseudo IDL
pseudo interface Environment {
   attribute exception exception;
   void clear();
};
```

Orbix

```
// C++
class Environment : public IT_PseudoIDL {
public:

   Request_ptr m_request;

   Environment(Exception*);
   Environment(Request&);
   Environment();

   ~Environment();
   Environment(const Environment&);

   const Environment& operator=(const Environment&);

   Environment(SystemException*);
   const Environment& operator=(Exception*);
```

```
    const Environment& operator=(SystemException*);

    operator int() const;

    void exception(Exception* e);
    Exception* exception() const;
    void clear();

    ULong timeout() const;
    void timeout(ULong t);

    void propagate(const Exception*);
    void propagate(const SystemException*);

    friend ostream& operator<< (ostream& o, Environment&);

    static Environment_ptr IT_create(Exception*,
       Environment& env = default_environment);
    static Environment_ptr IT_create(Request&,
       Environment& env = default_environment);
    static Environment_ptr IT_create(
       Environment& env = default_environment);
    static Environment_ptr IT_create(const Environment&,
       Environment& env = default_environment);
    static Environment_ptr IT_create(SystemException*,
       Environment& env = default_environment);
    static Environment_ptr _duplicate(
       Environment_ptr obj,
       Environment& env = default_environment);
    static Environment_ptr _nil(
       Environment& env = default_environment);
};
```

Notes CORBA compliant.

See Also `CORBA::default_environment`
`CORBA::BOA::get_principal()`

CORBA::Environment::Environment()

Synopsis `Environment();`

Description Default constructor.

Notes Orbix specific. Use of this constructor is compliant when the C++ environment does not support C++ exception handling. Refer to `CORBA::ORB::create_environment()` for the CORBA compliant way to create an `Environment` when the C++ environment supports exception handling.

See Also `CORBA::ORB::create_environment()`
`CORBA::Environment::IT_create()`

Other `Environment` constructors.

CORBA::Environment::Environment()

Synopsis `Environment(Exception* e);`

Description Conversion from an `Exception`. Constructs an `Environment` that contains the exception denoted by `e`.

Notes Orbix specific.

See Also `CORBA::Exception`
`CORBA::ORB::create_environment()`
`CORBA::Environment::IT_create()`

Other `Environment` constructors.

CORBA::Environment::Environment()

Synopsis `Environment(const Environment& env);`

Description Copy constructor.

Notes Orbix specific.

See Also `CORBA::ORB::create_environment()`
`CORBA::Environment::IT_create()`

Other `Environment` constructors.

CORBA::Environment::Environment()

Synopsis

```
Environment(SystemException* se);
```

Description Conversion from a `SystemException`. Constructs an `Environment` that contains the exception denoted by `se`.

Notes Orbix specific.

See Also

```
CORBA::SystemException
CORBA::ORB::create_environment()
CORBA::Environment::IT_create()
```

Other `Environment` constructors.

CORBA::Environment::~Environment()

Synopsis

```
~Environment();
```

Description Destructor.

Notes Orbix specific.

CORBA::Environment::operator=()

Synopsis

```
const Environment& operator=(const Environment& env);
```

Description Assignment operator.

Notes Orbix specific.

See Also

```
Environment::operator=(CORBA::Exception* e)
Environment::operator=(CORBA::SystemException* se)
```

CORBA::Environment::operator=()

Synopsis
```
const Environment& operator=(Exception* e);
```

Description Assignment from an `Exception`.

Notes Orbix specific.

See Also
```
Environment::operator=(const Environment& env)
Environment::operator=(CORBA::SystemException* se)
```

CORBA::Environment::operator=()

Synopsis
```
const Environment& operator=
   (SystemException* se);
```

Description Assignment from a system exception.

Notes Orbix specific.

See Also
```
Environment::operator=(const Environment& env)
Environment::operator=(CORBA::Exception* e)
```

operator<<()

Synopsis
```
friend ostream& operator<<(ostream& o,
   Environment env);
```

Description Overloads `operator<<()` to output exception information contained in the parameter `env` on ostream `o`.

Notes Orbix specific.

CORBA::Environment::_duplicate()

Synopsis
```
static Environment_ptr _duplicate(
   Environment_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns a reference to itself.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::Environment::_nil()

Synopsis

```
static Environment_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for an `Environment` object.

Notes CORBA compliant.

See Also `CORBA::is_nil()`

CORBA::Environment::clear()

Synopsis

```
void clear();
```

Description Deletes the `Exception`, if any, contained in the `Environment`. This is equivalent to passing zero to `CORBA::Environment::exception(CORBA::Exception*)`. It is not an error to call `clear()` on an `Environment` that holds no exception.

Notes CORBA compliant.

See Also `CORBA::Environment::exception(Exception*)`

CORBA::Environment::exception()

Synopsis `Exception* exception() const;`

Description Returns the exception, if any, raised by a preceding remote request. For example:

```
// C++
CORBA::Environment env;
A_var obj = ...
obj->op(env);
if(CORBA::Exception* ex = env.exception()) {
   ...
}
```

You can make a number of remote requests using the same `Environment` variable. Each attempt at a request immediately aborts if the `Exception` referenced by the `Environment` is not `0`, and thus any failure causes subsequent requests not to be attempted, until the exception pointer is reset to `0`. Any failed call may also generate one or more null proxies, so that any attempts to use these proxies prior to the end of an Orbix `TRY` macro (for non exception-handling compilers) are null operations.

Return Value The `Environment` retains ownership of the `Exception` returned. Thus, once the `Environment` is destroyed, or its `Exception` cleared, the reference is no longer valid.

Notes CORBA compliant.

See Also `CORBA::Environment::exception()`
`CORBA::Environment::exception(CORBA::Exception* e)`
`CORBA::Environment::clear()`

CORBA::Environment::exception()

Synopsis `void exception(Exception* e)`

Description Assigns the `Exception` denoted by `e` into the `Environment`. The `Environment` assumes ownership of `e`; it does not copy `e`. The exception `e` must have been dynamically allocated.

Notes CORBA compliant.

See Also `CORBA::Environment::exception()`

CORBA::Environment::int()

Synopsis

```
operator int() const;
```

Description A conversion operator to convert an `Environment` to an `int`. It allows `Environment` objects to be used in conditions of statements such as `if` and `while`—typically by the Orbix exception macros for non-exception handling compilers.

Notes Orbix specific.

CORBA::Environment::IT_create()

Synopsis

```
static Environment_ptr IT_create(
   Exception*, Environment& env = default_environment);
static Environment_ptr IT_create(
   Request&, Environment& env = default_environment);
static Environment_ptr IT_create(
   Environment& env = default_environment);
static Environment_ptr IT_create(
   const Environment&,
   Environment& env = default_environment);
static Environment_ptr IT_create(
   SystemException*,
   Environment& env = default_environment);
```

Description For consistency with other pseudo object types for which there is no CORBA specified way in the current standard C++ mapping to obtain an object reference, Orbix provides the `IT_create()` functions for class `Environment` to initialise an object reference. To ensure memory management consistency, you should not use the C++ `new` operator to create an `Environment`.

Refer to the corresponding constructors for details of the parameters to `IT_create()`.

Notes Orbix specific. See `CORBA::ORB::create_environment()` for the CORBA compliant way to create an `Environment`.

See Also `CORBA::ORB::create_environment()`

`Environment` constructors.

CORBA::Environment::m_request

Synopsis

```
Request* m_request;
```

Description A pointer to the `Environment`'s associated `Request` object, if any.

Notes Orbix specific.

See Also `CORBA::Request`

CORBA::Environment::propagate()

Synopsis

```
void propagate(const Exception* e);
void propagate(const SystemException* e);
```

Description If an operation implementation receives an exception when it calls another operation, it can propagate that exception back to its own caller. Both system and user-defined exceptions can be propagated in this way via the `Environment` parameter.

As an example, the code below assumes that interface `Bank` is implemented by class `Bank_i`, and that the `newAccount()` function calls another function (using the reference `pPtr`, whose nature is not of concern here) that can raise a `Bank::Reject` exception:

```
Account_ptr Bank_i::newAccount(const char* name,
   CORBA::Environment& pe =
      CORBA::default_environment) {
   someType_ptr pPtr = ....;
   TRY {
      pPtr->op(.....,IT_X);
   }
   CATCH (Bank::Reject, rej) {
      pe.propagate(rej);
   }
   ENDTRY
}
```

Notes Orbix specific.

CORBA::Environment::timeout()

Synopsis

```
ULong timeout() const;
```

Description Gets the timeout, in milliseconds, for remote calls for this `Environment`.

Notes Orbix specific.

See Also

```
CORBA::Environment::timeout(CORBA::ULong t)
CORBA::ORB::defaultTxTimeOut()
```

CORBA::Environment::timeout()

Synopsis

```
void timeout(ULong t);
```

Description Sets the timeout for remote (non-oneway) calls for the `Environment` on which it is called. The value set by this function remains active until reset for the `Environment`. This timeout value supersedes any timeout set globally by `CORBA::ORB::defaultTxTimeout()`.

This function is effective once a connection has been established between the client and server.

Parameters

`t` The timeout value in milliseconds.

Exceptions If a reply is not received within the given timeout interval, an invocation using this `Environment` value fails with a `CORBA::COMM_FAILURE` exception.

Notes Orbix specific.

See Also

```
CORBA::Environment::timeout()
CORBA::ORB::defaultTxTimeout()
```

CORBA::Exception

Synopsis Class `CORBA::Exception` is a base class for all system and user-defined exception classes.

Orbix
```
// C++
class Exception {
public:
   Exception();
   Exception(const Exception&);
   virtual ~Exception();
   const Exception& operator=(const Exception&);
};
```

Notes CORBA compliant.

See Also
`CORBA::SystemException`
`CORBA::UserException`
`CORBA::Environment`

CORBA::Exception::Exception()

Synopsis
```
Exception();
```

Description Default constructor.

Notes CORBA compliant.

See Also Other `Exception` constructors.

CORBA::Exception::Exception()

Synopsis
```
Exception(const Exception& e);
```

Description Copy constructor.

Notes CORBA compliant.

See Also Other `Exception` constructors.

CORBA::Exception::~Exception()

Synopsis

```
virtual ~Exception();
```

Description The destructor is virtual—`CORBA::Exception` is a base class for system and user-defined exceptions so derived classes may need to provide a destructor to deallocate resources that they have allocated.

Notes CORBA compliant.

CORBA::Exception::operator=()

Synopsis

```
const Exception& operator=(
   const Exception& e);
```

Description Assignment operator.

Notes Orbix specific.

CORBA::
ExtraConfigFileCVHandler

Synopsis

As described in the *Orbix C++ Administrator's Guide*, Orbix provides a configuration file, `iona.cfg`, to configure Orbix. The Orbix configuration handler, `IT_ScopedConfigFile`, reads and writes its values from the default Orbix configuration file. This file is located in the default location for that platform or pointed to by the `IT_CONFIG_PATH` environment variable.

You can provide additional configuration value handlers that read and write to different configuration files by creating an instance of class `CORBA::ExtraConfigFileCVHandler`. On creation, an instance of this class contains exactly the information stored in the `IT_ScopedConfigFile` handler.

You must activate the new handler using the static function `CORBA::ORB::ActivateCVHandler()`.

You can arrange active configuration handlers

explicitly using the static functions `CORBA::ORB::PlaceCVHandlerBefore()` and `CORBA::ORB::PlaceCVHandlerAfter()`. If not explicitly ordered, handlers are called in reverse order of instantiation, that is, the last handler to be instantiated is the first handler to be called.

Note: If you are migrating from Orbix 2.x and use `PlaceCVHandlerBefore()` or `PlaceCVHandlerAfter()`, you should update your code to specify `IT_ScopedConfigFile` instead of the old `IT_ConfigFile` or `IT_Registry` handlers. Refer to the *Orbix C++ Administrator's Guide* for more details.

Orbix

```
// C++
class ExtraConfigFileCVHandler {
public:
   ExtraConfigFileCVHandler(const char* identifier,
      const char* fileName);
   ~ExtraConfigFileCVHandler();
};
```

Notes Orbix specific.

See Also
```
CORBA::ExtraRegistryFileCVHandler
CORBA::UserCVHandler
CORBA::ORB::ActivateCVHandler()
```

CORBA::ExtraConfigFileCVHandler:: ExtraConfigFileCVHandler()

Synopsis
```
ExtraConfigFileCVHandler(const char* identifier,
   const char* fileName);
```

Description Constructor.

Parameters

`identifier`	The name of this configuration value handler.
`fileName`	The name of the file associated with this handler.

Notes Orbix specific.

CORBA::ExtraConfigFileCVHandler:: ~ExtraConfigFileCVHandler()

Synopsis
```
virtual ~ExtraConfigFileCVHandler();
```

Description Destructor.

Notes Orbix specific.

CORBA::ExtraRegistryCVHandler

Synopsis

You can configure Orbix using the System Registry on Windows NT and Windows 95. The Orbix configuration handler, `IT_Registry`, reads and writes its values from the System Registry.

You may provide additional configuration value handlers that read and write to a different registry by creating an instance of class `CORBA::ExtraRegistryFileCVHandler`. On creation, an instance of this class contains exactly the information stored in the `IT_Registry` handler.

The new handler must be activated using the static function `CORBA::ORB::ActivateCVHandler()`.

Active configuration handlers may be arranged explicitly using the static functions `CORBA::ORB::PlaceCVHandlerBefore()` and `CORBA::ORB::PlaceCVHandlerAfter()`. If not explicitly ordered, handlers are called in reverse order of instantiation, that is, the last handler to be instantiated is the first handler to be called.

Orbix

```
// C++
class ExtraRegistryCVHandler {
public:
   ExtraRegistryCVHandler(const char* identifier,
      const char* data);
   ExtraRegistryCVHandler(const char* identifier,
      HKEY hKey);
   ~ExtraRegistryCVHandler();

   HKEY GetRegKey();
};
```

Notes

Orbix specific.

See Also

`CORBA::UserCVHandler`
`CORBA::ExtraConfigFileCVHandler`
`CORBA::ORB::ActivateCVHandler()`

CORBA::ExtraRegistryCVHandler:: ExtraRegistryCVHandler()

Synopsis

```
ExtraRegistryCVHandler(const char* identifier,
   const char* data);
```

Description Constructor.

Parameters

`identifier`	The name of the configuration value handler.
`data`	An existing sub-key of `HKEY_LOCAL_MACHINE`.

Notes Orbix specific.

See Also Other constructor.

CORBA::ExtraRegistryCVHandler:: ExtraRegistryCVHandler()

Synopsis

```
ExtraRegistryCVHandler(const char* identifier,
   HKEY hKey);
```

Description Constructor.

Parameters

`identifier`	The name of the configuration value handler (previously created with the Windows API function `RegCreateKey()`).
`hKey`	The registry key for this handler.

Notes Orbix specific.

See Also Other constructor.

CORBA::ExtraRegistryCVHandler::~ExtraRegistryCVHandler()

Synopsis `~ExtraRegistryCVHandler();`

Description Destructor.

Notes Orbix specific.

CORBA::ExtraRegistryCVHandler::GetRegKey()

Synopsis `HKEY GetRegKey();`

Description Returns the registry key for this handler.

Notes Orbix specific.

CORBA::Filter

Synopsis

Class `CORBA::Filter` is a (conceptually) abstract class that describes the interface to a per-process filter.

If you wish to implement a per-process filter you may define a derived class of `CORBA::Filter` and redefine some or all of the ten monitoring functions as described in the *Orbix C++ Programmer's Guide*.

Orbix

```
// C++
class Filter {
protected:
   Filter();
   virtual ~Filter();
public:
   virtual Boolean outRequestPreMarshal(
      Request&, Environment&);

   virtual Boolean outRequestPostMarshal(
      Request&, Environment&);

   virtual int inRequestPreMarshal(
      Request&, Environment&);

   virtual Boolean inRequestPostMarshal(
      Request&, Environment&);

   virtual Boolean outReplyPreMarshal(
      Request&, Environment&);

   virtual Boolean outReplyPostMarshal(
      Request&, Environment&);

   virtual Boolean inReplyPreMarshal(
      Request&, Environment&);

   virtual Boolean inReplyPostMarshal(
      Request&, Environment&);
```

```
    virtual void outReplyFailure(
        Request&, Environment&);

    virtual void inReplyFailure(
        Request&, Environment&);
};
```

Notes Orbix specific.

See Also `CORBA::ThreadFilter`
`CORBA::AuthenticationFilter`

CORBA::Filter::Filter()

Synopsis

```
Filter();
```

Description The default constructor adds the newly-created filter object into the per-process filter chain. Direct instances of `Filter` cannot be created: the constructor is protected to enforce this. The derived classes of `Filter` usually have public constructors.

Notes Orbix specific.

CORBA::Filter::~Filter()

Synopsis

```
virtual ~Filter();
```

Description Destructor. Derived classes may need to redefine the destructor.

Notes Orbix specific.

CORBA::Filter::inReplyFailure()

Synopsis

```
virtual void inReplyFailure(Request& r, Environment&);
```

Description Defines the action to carry out if the target object raises an exception or if any preceding marshalling filter point ('out request', 'in request', 'out reply' or 'in reply') raises an exception or uses its return value to indicate that the call should not be processed any further.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return; }
```

Notes Orbix specific.

CORBA::Filter::inReplyPostMarshal()

Synopsis

```
virtual Boolean inReplyPostMarshal(
   Request& r, Environment&);
```

Description Defines the action to carry out after any operation on any object in another address space; in particular, after the operation response has arrived at the caller's address space and after the operation's return parameters and return value have been removed from the reply packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Return Value

`1`	Continue with the request as normal. The reply is sent to the next filter on the chain, or if this is the last filter then it is sent to the calling object.
`0`	Do not continue with the call. Reply immediately to the calling object; do not run the remaining filters.

Exceptions When redefining this function in a derived class you may raise an exception (and return `0`) to indicate that the call is not to be continued. If the return value is `0`, and no exception is raised, Orbix raises a `CORBA::FILTER_SUPPRESS` exception with a minor code of `CORBA::FILTER_SUPPRESS_FORCE`.

Notes Orbix specific.

CORBA::Filter::inReplyPreMarshal()

Synopsis

```
virtual Boolean inReplyPreMarshal(
   Request& r, Environment&);
```

Description

Defines the action to perform after any operation on any object in another address space; in particular after the operation response has arrived at the caller's address space and before the operation's return parameters and return value have been removed from the reply packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Return Value

`1`	Continue with the request as normal. The reply is sent to the next filter on the chain, or if this is the last filter it is sent to the calling object.
`0`	Do not continue with the call. Reply immediately to the calling object; do not run the remaining filters.

Exceptions

When redefining this function in a derived class you may raise an exception (and return `0`) to indicate that the call is not to be continued. If the return value is `0`, and no exception is raised, Orbix raises a `CORBA::FILTER_SUPPRESS` exception with a minor code of `CORBA::FILTER_SUPPRESS_FORCE`.

Notes

Orbix specific.

CORBA::Filter::inRequestPostMarshal()

Synopsis

```
virtual Boolean inRequestPostMarshal(
   Request& r, Environment&);
```

Description

Defines the action to carry out before any incoming operation on any object in the address space; in particular, before the operation has been sent to the target object and after the operation's parameters have been removed from the request packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Return Value

`1` Continue with the request as normal. The operation call is sent to the next filter on the chain, or, if this is the last filter, it is sent to the per-object filters, if any, and then to the target object.

`0` Do not continue with the call. Reply immediately to the caller's address space; do not send the invocation to the target object; do not run the remaining filters.

Exceptions When redefining this function in a derived class you may raise an exception (and return `0`) to indicate that the call is not to be continued. If the return value is `0`, and no exception is raised, Orbix raises a `CORBA::FILTER_SUPPRESS` exception with a minor code of `CORBA::FILTER_SUPPRESS_FORCE`. The exception is not propagated by Orbix to the caller: at this stage, the invocation is already completed and it is too late to raise an exception.

Notes Orbix specific.

CORBA::Filter::inRequestPreMarshal()

Synopsis

```
virtual int inRequestPreMarshal(
   Request& r, Environment&);
```

Description Defines the action to perform before incoming requests: before any incoming operation on any object in the address space; in particular, before the operation has been sent to the target object and before the operation's parameters have been removed from the request packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Return Value

`1` Continue with the request as normal. The operation call is sent to the next filter on the chain, or if this is the last filter then it is sent to (the per-object filters and then to) the target object.

`0` Do not continue with the call. Reply immediately to the caller's address space (where it will be handled by 'in reply' filters); do not run the remaining filters. To indicate that this has occurred, it is recommended that the filter raise an exception for the request.

`-1` (Orbix-MT only) The filter has created a thread to handle the request, and this thread may send the request to the target object. The other filters, if any, in the chain are not called. A filter that creates a thread should be placed last in the list of filters. To ensure this, such a filter should inherit from the C++ class `CORBA::ThreadFilter`.

Exceptions When redefining this function in a derived class you may raise an exception (and return `0`) to indicate that the call is not to be continued. If the return value is `0`, and no exception is raised, Orbix raises a `CORBA::FILTER_SUPPRESS` exception with a minor code of `CORBA::FILTER_SUPPRESS_FORCE`.

Notes Orbix specific.

See Also `CORBA::ThreadFilter`

CORBA::Filter::outReplyFailure()

Synopsis

```
virtual void outReplyFailure(Request& r, Environment&);
```

Description Defines the action to perform if the target object raises an exception or if any preceding filter point ('in request' or 'out reply') raises an exception or uses its return value to indicate that the call should not be processed any further.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return; }
```

Notes Orbix specific.

CORBA::Filter::outReplyPostMarshal()

Synopsis

```
virtual Boolean outReplyPostMarshal(
   Request& r, Environment&);
```

Description Defines the action to perform before outgoing replies: after any incoming operation on any object in the address space; in particular after the operation call has been processed, and after the operation's return parameters and return value have been added to the reply packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Return Value

`1` Continue with the request as normal. The reply is sent to the next filter on the chain, or if this is the last filter then it is sent to the calling object's address space (where it is handled by 'in reply' filters).

`0` Do not continue with the call. Reply immediately to the calling object's address space; do not run the remaining filters.

Exceptions When redefining this function in a derived class you may raise an exception (and return `0`) to indicate that the call is not to be continued. If the return value is `0`, and no exception is raised, Orbix raises a `CORBA::FILTER_SUPPRESS` exception with a minor code of `CORBA::FILTER_SUPPRESS_FORCE`.

Notes Orbix specific.

CORBA::Filter::outReplyPreMarshal()

Synopsis

```
virtual Boolean outReplyPreMarshal(
   Request& r, Environment&);
```

Description Defines the action to perform before outgoing replies: after any incoming operation on any object in the address space; in particular, after the operation call has been processed and before the operation's return parameters and return value have been added to the reply packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Return Value

- `1` Continue with the request as normal. The reply is sent to the next filter on the chain, or, if this is the last filter, it is sent to the calling object's address space (where it will be handled by 'in reply' filters).
- `0` Do not continue with the call. Reply immediately to the calling object's address space; do not run the remaining filters.

Exceptions When redefining this function in a derived class you may raise an exception (and return `0`) to indicate that the call is not to be continued. If the return value is `0`, and no exception is raised, Orbix raises a `CORBA::FILTER_SUPPRESS` exception with a minor code of `CORBA::FILTER_SUPPRESS_FORCE`.

Notes Orbix specific.

CORBA::Filter::outRequestPostMarshal()

Synopsis

```
virtual Boolean outRequestPostMarshal(
   Request& r, Environment&);
```

Description Defines the action to perform before outgoing requests: before any operation from this address space to any object in another address space; in particular, before the invocation has been transmitted and after the operation's parameters have been added to the request packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Return Value

- `1` Continue with the request as normal. The operation call is sent to the next filter on the chain, or if this is the last filter it is transmitted to the address space of the target object (where it is first handled by any per-process filters and then per-object filters).

0 Do not continue with the call. Reply immediately to the caller; do not send the invocation out of the caller's address space; do not run the remaining filters.

Exceptions When redefining this function in a derived class you may raise an exception (and return 0) to indicate that the call is not to be continued. If the return value is 0, and no exception is raised, Orbix raises a CORBA::FILTER_SUPPRESS exception with a minor code of CORBA::FILTER_SUPPRESS_FORCE.

Notes Orbix specific.

CORBA::Filter::outRequestPreMarshal()

Synopsis

```
virtual Boolean outRequestPreMarshal(
   Request& r, Environment&);
```

Description Defines the action to perform before outgoing requests: before any operation from this address space to any object in another address space; in particular, before the invocation has been transmitted and before the operation's parameters have been added to the request packet.

If not redefined in a derived class, the following implementation is inherited:

```
// C++
{ return 1; }  // Continue the call.
```

Notes Orbix specific.

Return Value

1 Continue with the request as normal. The operation call is sent to the next filter on the chain, or if this is the last filter it is transmitted to the address space of the target object (where it is first handled by any per-process filters and then per-object filters).

0 Do not continue with the call. Reply immediately to the caller; do not send the invocation out of the caller's address space; do not run the remaining filters.

Exceptions When redefining this function in a derived class you may raise an exception (and return `0`) to indicate that the call is not to be continued. If the return value is `0`, and no exception is raised, Orbix raises a `CORBA::FILTER_SUPPRESS` exception with a minor code of `CORBA::FILTER_SUPPRESS_FORCE`.

Notes Orbix specific.

CORBA::Flags

Synopsis The member functions of a number of classes—including `CORBA::Context`, `CORBA::Request`, and `CORBA::Object`—take a CORBA specified parameter of type `CORBA::Flags`. In Orbix, `Flags` are manipulated using class `CORBA::Flags`.

Orbix

```
// C++
class Flags {
public:
   Flags();
   Flags(ULong i);
   Flags(const Flags& f);

   operator ULong() const { return m_flags;}

   void setf(ULong i);
   void clrf(ULong i);
   void reset();

   int isNil() const;
   int isSet(ULong i) const;
   int isSetAny(ULong i) const;
   int isSetAll(ULong i) const;

   void setArgDef(ULong i);

   Flags& operator=(const Flags& f);
};
```

CORBA::Flags::Flags()

Synopsis

```
Flags();
```

Description Default constructor for null flags. All flags are cleared.

Notes Orbix specific.

See Also Other `Flags` constructors.

CORBA::Flags::Flags()

Synopsis `Flags(ULong l);`

Description Creates a `Flags` object with flags set as indicated by `l`.

Notes Orbix specific.

See Also Other `Flags` constructors.

CORBA::Flags::Flags()

Synopsis `Flags(const Flags& f);`

Description Copy constructor.

Notes Orbix specific.

See Also Other `Flags` constructors.

CORBA::Flags::operator=()

Synopsis `Flags& operator=(const Flags& f);`

Description Assignment operator.

Notes Orbix specific.

CORBA::Flags::clrf()

Synopsis `void clrf(ULong i);`

Description Clears flag `i`.

Notes Orbix specific.

CORBA::Flags::isNil()

Synopsis `int isNil() const;`

Description Tests whether or not all flags are clear.

Return Value Returns `1` (true) if all flags clear; returns `0` (false) otherwise.

Notes Orbix specific.

CORBA::Flags::isSet()

Synopsis `int isSet(ULong i) const;`

Description Tests whether flag `i` is set in this object.

Return Value Returns `1` (true) if `i` is set; returns `0` (false) otherwise.

Notes Orbix specific.

See Also `CORBA::Flags::isSetAny()`

CORBA::Flags::isSetAll()

Synopsis `int isSetAll(ULong i) const;`

Description Tests whether all flags set in `i` are set in this object.

Return Value Returns `1` (true) if all flags in `i` are set; returns `0` (false) otherwise.

Notes Orbix specific.

CORBA::Flags::isSetAny()

Synopsis `int isSetAny(ULong i) const;`

Description Tests if any flag set in `i` is set in this object. (This is the same as `isSet(int i)`).

Return Value Returns `1` (true) if any flag in `i` is set; returns `0` (false) otherwise.

Notes Orbix specific.

See Also `CORBA::Flags::isSet()`

CORBA::Flags::ULong()

Synopsis `operator ULong() const;`

Description Conversion operator to convert `Flags` object to `CORBA::ULong`.

Notes Orbix specific.

CORBA::Flags::reset()

Synopsis `void reset();`

Description Clears all flags.

Notes Orbix specific.

CORBA::Flags::setArgDef()

Synopsis `void setArgDef(ULong i);`

Description Sets flag as specified in `i`, and clears any other flag. This is usually used to set `ARG` flags (`CORBA::ARG_IN`, `CORBA::ARG_OUT`, `CORBA::ARG_INOUT`) since they are mutually exclusive.

Notes Orbix specific.

See Also `CORBA::Flags::setf()`

CORBA::Flags::setf()

Synopsis `void setf(ULong i);`

Description Sets flags as specified in `i`.

Notes Orbix specific.

See Also `CORBA::Flags::setArgDef()`

CORBA::ImplementationDef

Synopsis Class `ImplementationDef` implements the OMG CORBA pseudo object type `ImplementationDef` that represents information about an implementation (server).

CORBA

```
// IDL
pseudo interface ImplementationDef {};
```

Orbix

```
// C++
class ImplementationDef {
public:
   static ImplementationDef_ptr IT_create(
      const char* obj,
      Environment& env = default_environment);

   static ImplementationDef_ptr _duplicate (
      ImplementationDef_ptr obj,
      Environment& env = default_environment);

   static ImplementationDef_ptr _nil (
      Environment& env = default_environment);
};
```

Notes CORBA compliant.

CORBA::ImplementationDef::_duplicate()

Synopsis

```
static ImplementationDef_ptr _duplicate(
   ImplementationDef_ptr obj,
   Environment &env = default_environment);
```

Description Increments the reference count of `obj`.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::ImplementationDef::_nil()

Synopsis

```
static ImplementationDef_ptr _nil(
   Environment &env = default_environment);
```

Description Returns a nil object reference for `ImplementationDef`.

Notes CORBA compliant.

See Also `CORBA::is_nil()`

CORBA::ImplementationDef::IT_create()

Synopsis

```
static ImplementationDef_ptr IT_create(
   const char* impl,
   Environment& env = default_environment);
```

Description In the absence of a CORBA-specified way to create an `ImplementationDef` pseudo object in the current standard C++ mapping, Orbix provides the `IT_create()` function to initialise an object reference for an `ImplementationDef`.

Use of this function is recommended in preference to C++ operator `new` to ensure memory management consistency.

Notes CORBA compliant.

CORBA::IT_IOCallback

Synopsis

Orbix allows a client or server program to receive notification when another a TCP/IP connection to another application is opened or closed. To receive notification of these events, you should define a class that inherits class `CORBA::IT_IOCallback` and implements the functions `OrbixFDOpen()` and `OrbixFDClose()`. Orbix calls these functions when a connection is opened and closed, respectively.

Class `CORBA::IT_IOCallback` also allows you to integrate the Orbix event processing loop with foreign file descriptors. The functions `CORBA::ORB::addForeignFD()` and `CORBA::ORB::addForeignFDSet()` allow you to add foreign file descriptors to the Orbix event loop. If you inherit class `CORBA::IT_IOCallback` and implement the functions `ForeignFDRead()`, `ForeignFDRead()`, and `ForeignFDExcept()`, you can receive notification when events occur on those foreign file descriptors.

Orbix

```
// C++
class IT_IOCallback {
public:
   virtual ~IT_IOCallback() {}

   virtual void OrbixFDOpen(int fd);
   virtual void OrbixFDClose(int fd);

   virtual void ForeignFDRead(int fd);
   virtual void ForeignFDWrite(int fd);
   virtual void ForeignFDExcept(int fd);
};
```

Notes

Orbix specific.

See Also

`CORBA::ORB::addForeignFD()`
`CORBA::ORB::addForeignFDSet()`
`CORBA::ORB::registerIOCallbackObject()`
`CORBA::ORB::removeForeignFD()`
`CORBA::ORB::removeForeignFDSet()`
`CORBA::ORB::unregisterIOCallbackObject()`

CORBA::IT_IOCallback::ForeignFDExcept()

Synopsis `virtual void ForeignFDExcept(int fd);`

Description Defines the action to be taken when an exception event occurs on a foreign file descriptor registered with the Orbix event loop.

Parameters

`fd` The foreign file descriptor on which an event occurred.

Notes Orbix specific.

CORBA::IT_IOCallback::ForeignFDRead()

Synopsis `virtual void ForeignFDRead(int fd);`

Description Defines the action to be taken when a read event occurs on a foreign file descriptor registered with the Orbix event loop.

Parameters

`fd` The foreign file descriptor on which an event occurred.

Notes Orbix specific.

CORBA::IT_IOCallback::ForeignFDWrite()

Synopsis `virtual void ForeignFDWrite(int fd);`

Description Defines the action to be taken when a write event occurs on a foreign file descriptor registered with the Orbix event loop.

Parameters

`fd` The foreign file descriptor on which an event occurred.

Notes Orbix specific.

CORBA::IT_IOCallback::OrbixFDClose()

Synopsis `virtual void OrbixFDClose(int fd);`

Description Defines the action to be taken when an existing Orbix connection closes.

Parameters

`fd` The file descriptor associated with the closed connection.

Notes Orbix specific.

CORBA::IT_IOCallback::OrbixFDOpen()

Synopsis `virtual void OrbixFDOpen(int fd);`

Description Defines the action to be taken when a new Orbix connection is opened.

Parameters

`fd` The file descriptor associated with the new open connection.

Notes Orbix specific.

CORBA::IT_reqTransformer

Synopsis

Class `CORBA::IT_reqTransformer` defines the interface for transformer objects that allow a `CORBA::Request`'s data buffer to be modified before an operation invocation is transmitted to a server and before a reply is returned to a client.

If you wish to implement a transformer you may define a derived class of `CORBA::IT_reqTransformer` and redefine at least the `transform()` function as described in the *Orbix C++ Programmer's Guide*.

Orbix

```
// C++
class IT_reqTransformer {
protected:
   const char* m_remote_host;
public:
   virtual Boolean transform(
      unsigned char*& data,
      ULong& actual_sz,
      ULong& allocd_sz,
      Boolean send,
      Boolean is_first);

   virtual void free_buf(unsigned char* data,
      ULong actual_sz,
      ULong allocd_sz);

   virtual const char* transform_error();

   void setRemoteHost(const char* host_name);
};


class CORBA::ORB {
public:
   ...
   IT_reqTransformer* setMyReqTransformer(
      IT_reqTransformer*,
      Environment &env = IT_chooseDefaultEnv());
```

```
    void setReqTransformer(IT_reqTransformer*,
     const char* server,
     const char* host = 0,
     Environment& env = IT_chooseDefaultEnv());

    IT_reqTransformer* getMyReqTransformer();
};
```

Notes Orbix specific.

See Also `CORBA::Request`

CORBA::IT_reqTransformer::free_buf()

Synopsis

```
virtual void free_buf(unsigned char* data,
   ULong actual_sz,
   ULong allocd_sz);
```

Description A derived class of `IT_reqTransformer()` that alters the way in which data is stored in an implementation of the `transform()` function may need to provide an implementation for `free_buf()`.

The default implementation of `free_buf()` performs `delete []` on the buffer passed in the parameter `data`.

The function `free_buf()` is called automatically by Orbix after the buffer has been transmitted.

Parameters

`data`	The buffer to be freed.
`actual_sz`	The actual size of the data contained in the buffer. This is not necessarily the same as the size of the memory buffer allocated to store the data since memory buffers are allocated in pages.
`allocd_sz`	Identifies the allocated size of the buffer being passed. This may differ from the actual size of the data buffer. Buffer space is allocated in pages and may, therefore, be larger than the amount of data contained in the buffer.

Notes Orbix specific.

CORBA::IT_reqTransformer::transform()

Synopsis

```
virtual Boolean transform(
   unsigned char*& data,
   ULong& actual_sz,
   ULong& allocd_sz,
   Boolean send,
   Boolean is_first);
```

Description

Defines the transformation to be performed on a `CORBA::Request`. This function is automatically invoked on the registered transformer object immediately prior to transmitting data in a `CORBA::Request` (and after any filtering) and directly subsequent (before any filtering) to receiving data in a `CORBA::Request`.

A derived class of `CORBA::IT_reqTransformer` should override this function to implement a transformation.

An implementation of this function may raise a `TRANSFORM_ERR` system exception to indicate that an error has occurred during the transformation.

Parameters

`data`	A pointer to the start of the data buffer.
`actual_sz`	The size, in bytes, of the actual data contained in the data buffer. This is not necessarily the same as the size of the memory buffer allocated to store the data since memory buffers are allocated in pages.
`allocd_sz`	The size of the buffer allocated for the `Request`'s data. Buffer space is allocated in pages and may, therefore, be larger than the amount of data contained in the buffer.
`send`	A flag that identifies whether the data is being transmitted from an address space or received into an address space. A value of `1` indicates that data is outgoing; a value of `0` indicates that the data is incoming.

`is_first`	A flag that identifies whether the data buffer is the first in a list of buffers to be transmitted. This flag is meaningful only if data is being transmitted from an address space since Orbix may allocate more than one buffer to hold data on the sending side. Data received into an address space is placed in a single buffer. The value of `is_first` is `1` if the parameter data points to the first in a list of buffers to be transmitted; otherwise, `is_first` has the value `0`.

Return Value Returns `1` (true) if the transformation is successful, returns `0` (false) otherwise. The `TRANSFORM_ERR` system exception is raised by Orbix if `0` is returned.

Notes Orbix specific.

See Also `CORBA::Filter`

CORBA::IT_reqTransformer::transform_error()

Synopsis

```
virtual const char* transform_error();
```

Description Returns a string describing an error that has occurred in the `transform()` function. A derived class may override this function to return a text string specific to the transformation implemented by the class.

Notes Orbix specific. The programmer is responsible for freeing the returned string (using `CORBA::string_free()`).

CORBA::IT_reqTransformer::setRemoteHost()

Synopsis
```
void setRemoteHost(const char* host_name);
```

Description Called by Orbix prior to calling the `transform()` function to record the name of the host initiating the `Request`.

Parameters

`host_name`	The name of the host.

Notes Orbix specific.

CORBA::ORB::getMyReqTransformer()

Synopsis
```
IT_reqTransformer* getMyReqTransformer();
```

Description Returns the registered transformer object; returns `0` if no transformer registered.

Notes Orbix specific.

See Also `CORBA::setMyReqTransformer()`

CORBA::ORB::setMyReqTransformer()

Synopsis
```
IT_reqTransformer* setMyReqTransformer(
   IT_reqTransformer*,
   Environment &env = IT_chooseDefaultEnv());
```

Description Registers an `IT_reqTransformer` object as the default transformation for `Requests` leaving or entering the address space.

Parameters

`transformer`	A pointer to the transformer object.

Return Value Returns a pointer to the previous transformer registered for this process; returns zero if no transformer previously registered.

Notes Orbix specific.

See Also `CORBA::IT_reqTransformer`

CORBA::setReqTransformer()

CORBA::ORB::setReqTransformer()

Synopsis

```
void setReqTransformer(IT_reqTransformer* transformer,
   const char* server,
   const char* host = 0,
    Environment& env = IT_chooseDefaultEnv());
```

Description Registers a transformer to be used when sending or receiving data from a specific server on a specific host. A transformer registered using this function overrides any transformer registered for the process when communicating with the server and host specified.

Parameters

`transformer`	A pointer to the transformer to be registered.
`server`	The name of the server for which the transformer is to be used.
`host`	The name of the host.

Notes Orbix specific.

See Also `CORBA::setMyReqTransformer()`

CORBA::LoaderClass

Synopsis

When an operation invocation arrives at a process, Orbix searches for the target object in the process's object table. By default, if the object is not found, Orbix returns a `CORBA::INV_OBJREF` exception to the caller. However, by installing one or more loader objects in a process, you can choose to intervene and be informed about the failure to find the object.

A loader object might handle such an "object fault" by reconstructing the required object from a persistent store—such as a flat file, an RDBMS, or an ODBMS.

You can than request Orbix to retry the invocation transparently to the caller.

To define a loader, you define a derived class of `CORBA::LoaderClass`. To install a loader, you create a dynamic instance of the new class.

Orbix

```
// C++
enum saveReason {
   processTermination,
   explicitCall,
   objectDeletion
};

class LoaderClass {
protected:
   LoaderClass(Boolean registerMe = 0);
public:
   virtual ~LoaderClass();

   virtual Object_ptr load(const char* interface,
      const char* marker,
      Boolean isLocal, Environment&);

   virtual void save(Object_ptr obj, saveReason reason,
      Environment&);

   virtual void record(Object_ptr obj, char*& marker,
      Environment&);
```

```
    virtual Boolean rename(Object_ptr obj, char*& marker,
      Environment&);
};
```

Notes Orbix specific.

See Also `CORBA::NullLoaderClass`

CORBA::LoaderClass::LoaderClass()

Synopsis

```
LoaderClass(Boolean registerMe = 0);
```

Description The `LoaderClass` constructor has protected access—you cannot, therefore, create a direct instance of class `LoaderClass`.

Parameters

`registerMe`	The value of this parameter must be `1` (true) if the `load()` function of the new loader is to be called by Orbix, rather than explicitly by you.

Notes Orbix specific.

See Also `CORBA::LoaderClass::load()`

CORBA::LoaderClass::~LoaderClass()

Synopsis

```
virtual ~LoaderClass();
```

Description The destructor.

Notes Orbix specific.

CORBA::LoaderClass::load()

Synopsis

```
virtual Object_ptr load(const char* interface,
   const char* marker, Boolean isLocal);
```

Description

When an object fault occurs, the `load()` function is called on each loader in turn until one of them successfully returns the address of the object, or until they have all returned zero.

The responsibility of the `load()` function is to determine if the required object is to be loaded by the current loader, and if so, then to create the object and assign the correct marker to it.

Parameters

`interface` The interface name of the missing object is determined as follows: if an object fault occurs during the call:

```
// C++
pPtr = I1::_bind( <parameters> );
```

the interface name in `load()` is "`I1`".

If the first parameter to `_bind()` is a full object reference string, Orbix returns an exception if the reference's interface field is not `I1` or a derived interface of `I1`.

If an object fault occurs during the call:

```
// C++
pPtr = CORBA::Orbix.string_to_object
( <full object reference string> );
```

the interface name in `load()` is that extracted from the full object reference string.

If a loader is called because of a reference entering an address space (as an `in`, `out` or `inout` parameter, a return value, or as the target object of an operation call), the interface name in `load()` is the interface name extracted from the object reference.

The switches passed to the IDL compiler affect how the interface name is seen by `load()`. Refer to `CORBA::Object::_interfaceMarker()`.

`marker` The marker of the required object.

isLocal	Set to 1 (true) if the object fault occurred because of a call to _bind() or CORBA::Orbix.string_to_object() by the process itself. Set to 0 (false) if the object fault occurred because of an object fault on the target object of an incoming operation invocation, or on an in, out or inout parameter or return value.

Return Value Returns the object reference if the object is found, returns a nil object reference otherwise.

Notes Orbix specific.

See Also
CORBA::ORB::string_to_object()
CORBA::LoaderClass::save()
CORBA::Object::_interfaceMarker()

CORBA::LoaderClass::record()

Synopsis
```
virtual void record(Object_ptr obj_ref
   char*& marker);
```

Description When you name an object by passing a marker name to the TIE or BOAImpl constructor, Orbix calls record() on the object's loader.

A derived class may redefine record() to override your choice of name.

The default loader, implemented by CORBA:NullLoaderClass, inherits its implementation of record() from LoaderClass. This implementation does not change the chosen name. It may, however, raise an exception if the name is in use (that is, an object with the same interface name and marker name already exists in the server process) and the object consequently can not be registered.

If no marker name is suggested (marker is zero), the default NullLoaderClass record() function chooses a name that is a string of decimal digits, different to any generated before in the current process.

You may also name an object using the function CORBA::Object::_marker(). In the case, Orbix calls rename() rather than record() on the object's loader.

Notes Orbix specific.

See Also
CORBA::LoaderClass::rename()
CORBA::NullLoaderClass

CORBA::LoaderClass::rename()

Synopsis

```
virtual Boolean rename(Object_ptr obj,
   char*& marker);
```

Description When you name an object by calling `CORBA::Object::_marker()`, Orbix calls `rename()` on the object's loader.

A derived class may redefine `rename()` to override your choice of name.

The default loader, implemented by `CORBA::NullLoaderClass`, inherits its implementation of `rename()` from `LoaderClass`. This implementation does not change the chosen name. It may, however, raise an exception, and return `0`, if the name is in use (that is, an object with the same interface name and marker name already exists in the server process).

You may also name an object by passing a marker name to the TIE or BOAImpl constructor. In this case, Orbix calls `record()` on the object's loader.

Return Value Returns `1` (true) if the object is successfully renamed, returns `0` (false) otherwise.

Notes Orbix specific.

See Also `CORBA::LoaderClass::record()`
`CORBA::Object::_marker()`

CORBA::LoaderClass::save()

Synopsis

```
virtual void save(Object_ptr obj,
   saveReason reason);
```

Description When a process terminates, Orbix iterates through all of the objects in its object table and calls `save()` on the loader associated with each object. A loader may save the object to persistent storage (either by calling a function on the object, or by accessing the object's data).

The associated loader's `save()` function is also called when an object is destroyed; and you can also call it explicitly for an object by calling its `CORBA::Object::_save()` function. `CORBA::Object::_save()` simply calls the `save()` function on the object's loader. You must call the `_save()` function in the same address space as the target object: calling it in a client process, that is, on a proxy, has no effect.

As Orbix iterates through its object table on process termination, it calls save() on each object's loader; note, however, that it does not destroy the objects themselves. It does destroy the loader objects afterwards.

Parameters

obj	The object on whose loader is save() is being called.
reason	The reason that save() has been called. This may be:
	processTermination: The process is about to exit.
	explicitCall: The object's _save() function has been called.
	objectDeletion: CORBA::release() has been called on the object, which previously had a reference count of 1.

Notes Orbix specific.

See Also
CORBA::NullLoaderClass
CORBA::Object::_save()
CORBA::LoaderClass::load()

CORBA::locatorClass

Synopsis Class `CORBA::locatorClass` is an abstract base class that defines the interface to a location server. Orbix uses the installed locator to find a target object in the distributed system when `_bind()` is called with a null host name.

You may override the default locator by defining and implementing a derived class of `CORBA::locatorClass` as described in the *Orbix C++ Programmer's Guide*.

Orbix

```
// C++
class locatorClass {
public:
   virtual CORBA::ORB::IT_StringSeq lookUp(
      const char* ServiceName,
      ULong MaxHops,
      const Context& context,
      Environment&) = 0;
};
static locatorClass* locator;
```

Notes Orbix specific.

CORBA::locatorClass::locatorClass()

Synopsis

```
locatorClass();
```

Description Default constructor.

Notes Orbix specific.

CORBA::locatorClass::lookUp()

Synopsis

```
virtual CORBA::ORB::IT_StringSeq lookUp(const char* ServiceName,
   ULong MaxHops, const Context& context);
```

Description Searches for a server. It is called on the locator pointed to by `CORBA::locator`, when `_bind()` is called with a null host name. Any parameters to `_bind()` are passed to `lookUp()`.

Parameters

`ServiceName`	The name of the server being sought.
`MaxHops`	In the default locator, this is interpreted as the maximum number of machines to search for the required server. An interpretation similar to this one should be retained in a user-defined locator if it is to be used without changing client code that explicitly calls `lookUp()`.
`context`	This allows a client to pass extra information to the locator: for example, constraints on how to search for the server. You can use the context parameter to define properties to be used when deciding between a set of servers with the same name. The `Context` passed to `lookUp()` originates in the `Context` value passed by the application programmer to an `_bind()` call. The default locator ignores this parameter.

Return Value The default locator returns a list of names of hosts on which that server is registered in the Implementation Repository. The default implementation of the locator randomises the sequence before returning it. This is a basic technique in load balancing to avoid swamping any one server. An empty sequence is returned if no host names can be found for the specified server.

Notes Orbix specific.

CORBA::NamedValue

Synopsis The C++ class `CORBA::NamedValue` implements the IDL pseudo object type `NamedValue` that is used only as an element of an `NVList`, chiefly in the DII. A `NamedValue` describes an argument to a `Request`: it contains an optional name, an any value and labelling flags.

CORBA

```
// Pseudo IDL
pseudo interface NamedValue {
   readonly attribute Identifier name;
   readonly attribute any value;
   readonly attribute Flags flags;
};
```

Orbix

```
// C++
typedef char* Identifier;

class NamedValue : public IT_PseudoIDL {
public:
   const char* name() const;
   Any* value ()const;
   Flags flags ()const;

   NamedValue();
   NamedValue(const NamedValue&);
   const NamedValue& operator=(const NamedValue&);

   ~NamedValue();

   static NamedValue_ptr IT_create(
      Environment& env = default_environment);
   static NamedValue_ptr IT_create(const NamedValue&,
      Environment& env = default_environment);

   static NamedValue_ptr _duplicate(
      NamedValue_ptr obj,
      Environment& env = default_environment);
```

```
   static NamedValue_ptr _nil(
      Environment& env = default_environment);
};
```

Notes CORBA compliant.

See Also
`CORBA::NVList`
`CORBA::Request`
`CORBA::Flags`

CORBA::NamedValue::NamedValue()

Synopsis
```
NamedValue();
```

Description Default constructor.

Notes Orbix specific. See `CORBA::NVList::add()`, `CORBA::NVList::add_item()`, `CORBA::NVList::add_value()`, `CORBA::NVList::add_item_consume()`, `CORBA::NVList::add_value_consume()` and `CORBA::ORB::create_named_value()` for CORBA compliant ways to create a `NamedValue`.

See Also
`CORBA::NVList::add()`
`CORBA::NVList::add_item()`
`CORBA::NVList::add_value()`
`CORBA::NVList::add_item_consume()`
`CORBA::NVList::add_value_consume()`
`CORBA::NamedValue::IT_create()`
`CORBA::ORB::create_named_value()`

CORBA::NamedValue::NamedValue()

Synopsis
```
NamedValue(const NamedValue& nv);
```

Description Copy constructor.

Notes Orbix specific.

See Also
`CORBA::NVList::add()`
`CORBA::NVList::add_item()`
`CORBA::NVList::add_value()`
`CORBA::NVList::add_item_consume()`
`CORBA::NVList::add_value_consume()`

```
CORBA::NamedValue::IT_create()
CORBA::ORB::create_named_value()
```

CORBA::NamedValue::~NamedValue()

Synopsis
```
~NamedValue();
```

Description Destructor.

Notes Orbix specific.

See Also `CORBA::release()`

CORBA::NamedValue::operator=()

Synopsis
```
const NamedValue& operator=(
   const NamedValue& nv);
```

Description Assignment operator.

Notes Orbix specific.

CORBA::NamedValue::_duplicate()

Synopsis
```
static NamedValue_ptr _duplicate(
   NamedValue_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns a reference to self.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::NamedValue::_nil()

Synopsis
```
static NamedValue_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for a NamedValue.

Notes CORBA compliant.

See Also CORBA::is_nil()

CORBA::NamedValue::flags()

Synopsis
```
Flags flags() const;
```

Description Returns the CORBA::Flags object associated with the NamedValue.

Notes CORBA compliant.

See Also CORBA::Flags

CORBA::NamedValue::IT_create()

Synopsis
```
static NamedValue_ptr IT_create(
   Environment& env = default_environment);
static NamedValue_ptr IT_create(const NamedValue&,
   Environment& env = default_environment);
```

Description For consistency with other pseudo object types, Orbix provides the IT_create() function for class NamedValue in order to obtain a NamedValue object reference. To ensure memory management consistency, you should not use the C++ new operator to create a NamedValue.

See the corresponding constructor for details of the parameters to IT_create().

Notes Orbix specific. See CORBA::NVList::add(), CORBA::NVList::add_item(), CORBA::NVList::add_value(), CORBA::NVList::add_item_consume(), CORBA::NVList::add_value_consume() and CORBA::ORB::create_named_value() for CORBA compliant ways to create a NamedValue.

See Also
CORBA::NVList::add()
CORBA::NVList::add_item()
CORBA::NVList::add_value()
CORBA::NVList::add_item_consume()
CORBA::NVList::add_value_consume()
CORBA::NamedValue::IT_create()

CORBA::ORB::create_named_value()

CORBA::NamedValue::name()

Synopsis `const char* name() const;`

Description The optional name associated with the `NamedValue`. This is the name of a parameter or argument to a request.

Return Value The return value is a pointer to the internal memory of the `NamedValue`.

Notes CORBA compliant.

CORBA::NamedValue::value()

Synopsis `Any* value() const;`

Description Returns a pointer to the `CORBA::Any` contained in the `NamedValue`.

Return Value The return value is a pointer to the internal memory of the `NamedValue`.

Notes CORBA compliant.

See Also `CORBA::Any`

CORBA::NullLoaderClass

Synopsis The default loader is an instance of a `CORBA::NullLoaderClass`. This class inherits the functions `load()`, `save()` and `rename()` from `CORBA::LoaderClass`. The default loader does not support persistence. It is associated with all objects that are not explicitly associated with another loader.

Orbix

```
// C++
// In namespace CORBA.
class  NullLoaderClass : public LoaderClass {
public:
   NullLoaderClass();

   virtual void record(Object_ptr obj, char*& marker,
      Environment&);
};
static NullLoaderClass* defaultLoader;
```

Notes Orbix specific.

See Also `CORBA::LoaderClass`

CORBA::NullLoaderClass::NullLoaderClass()

Synopsis `NullLoaderClass();`

Description Default constructor.

Notes Orbix specific.

See Also `CORBA::LoaderClass::LoaderClass()`

CORBA::NullLoaderClass::record()

Synopsis

```
virtual void record(Object_ptr obj_ref obj,
   char*& marker, Environment&);
```

Description If no marker name is suggested in `marker`, this function chooses one that is a string of decimal digits, different to any it generated before.

You can ensure that the markers they choose are different from those chosen by Orbix by not using strings that consist entirely of digits.

Notes Orbix specific.

See Also `CORBA::LoaderClass::record()`

CORBA::NVList

Synopsis The C++ class `CORBA::NVList` implements the CORBA pseudo object type `NVList`. An `NVList` is a list of `NamedValue` elements—a `NamedValue` describes an argument to a `Request`.

CORBA

```
// Pseudo IDL
exception Bounds {};
pseudo interface NVList {
   readonly attribute unsigned long count;
   NamedValue add(in Flags flags);
   NamedValue add_item(in Identifier item_name,
      in Flags flags);
   NamedValue add_value(in Identifier item_name,
      in any val, in Flags flags);
   NamedValue unsigned item(in long index) raises(Bounds);
   Status remove(in unsigned long index) raises(Bounds);
};
```

Orbix

```
// C++
struct  NVList : public IT_PseudoIDL {
   ULong count(Environment& env = default_environment) const;

   NamedValue_ptr add(
      Flags item_flags,
      Environment& env = default_environment);

   NamedValue_ptr add_item(
      const char* item_name,
      Flags item_flags
      Environment& env = default_environment);

   NamedValue_ptr add_item_consume(
      char* item_name,
      Flags item_flags,);

   NamedValue_ptr add_value_consume(
      char* item_name,
      Any* item_value,
      Flags item_flags,);
```

```
    NamedValue_ptr add_value(
       const char* item_name,
       const Any& item_type,
       Flags item_flags,
       Environment& env = default_environment);


    NamedValue_ptr item(
       CORBA::ULong index,
       Environment& env = default_environment);

    Status remove(CORBA::Long l,
       Environment& env = default_environment);

    NVList();

    NVList(Long l, Environment& env = default_environment);

    NVList(const NVList&);

    const NVList& operator=(const NVList&);

    ~NVList();

    static NVList_ptr IT_create(
       Environment& env = default_environment);

    static NVList_ptr IT_create(
       Long,
       Environment& env = default_environment);

    static NVList_ptr IT_create(
       const NVList&,
       Environment& env = default_environment);

    static NVList_ptr _duplicate(
       NVList_ptr obj,
       Environment& env = default_environment);

    static NVList_ptr _nil(
       Environment& env = default_environment);
};
```

Notes CORBA compliant.

See Also `CORBA::NamedValue`
`CORBA::Request`

CORBA::NVList::NVList()

Synopsis

```
NVList();
```

Description Default constructor.

Notes Orbix specific. Refer to `CORBA::ORB::create_list()` and `CORBA::ORB::create_operation_list()` for CORBA compliant ways to create an `NVList`.

See Also `CORBA::ORB::create_list()`
`CORBA::ORB::create_operation_list()`
`CORBA::NVList::IT_create()`

Other `NVList` constructors.

CORBA::NVList::NVList()

Synopsis

```
NVList(Long size,
   Environment& env = default_environment);
```

Description Constructs an `NVList` of length `size`.

Notes Orbix specific. See `CORBA::ORB::create_list()` and `CORBA::ORB::create_operation_list()` for CORBA compliant ways to create an `NVList`.

See Also `CORBA::ORB::create_list()`
`CORBA::ORB::create_operation_list()`
`CORBA::NVList::IT_create()`

Other `NVList` constructors.

CORBA::NVList::NVList()

Synopsis

```
NVList(const NVList&);
```

Description Copy constructor.

Notes Orbix specific.

See Also Other `NVList` constructors.

CORBA::NVList::~NVList()

Synopsis
```
~NVList();
```

Description Destructor.

Notes Orbix specific.

CORBA::NVList::operator=()

Synopsis
```
const NVList& operator=(const NVList&);
```

Description Assignment operator.

Notes Orbix specific.

CORBA::NVList::_duplicate()

Synopsis
```
static NVList_ptr _duplicate(
   NVList_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns a reference to self.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::NVList::_nil()

Synopsis
```
static NVList_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for an `NVList` object.

Notes CORBA compliant.

See Also `CORBA::is_nil()`

CORBA::NVList::add()

Synopsis

```
NamedValue_ptr add(Flags item_flags,
   Environment& env = default_environment);
```

Description Creates an unnamed `NamedValue`, initialising only the `Flags` and adds it to the list.

Parameters

`item_flags`	Item flags (`ARG_IN`, `ARG_OUT`, `ARG_INOUT`).

Return Value Returns the new `NamedValue`. The reference count of the returned `NamedValue` pseudo object is *not* incremented. Therefore, the caller should not release the returned reference when no longer needed, nor assign it to a `_var` variable.

Notes CORBA compliant.

CORBA::NVList::add_item()

Synopsis

```
NamedValue_ptr add_item(const char* item_name,
   Flags item_flags,
   Environment& env = default_environment);
```

Description Creates a `NamedValue` with name and `Flags` initialised, and adds it to the list.

Parameters

`item_name`	Name of item.
`item_flags`	Item flags (`ARG_IN`, `ARG_OUT`, `ARG_INOUT`).

Return Value Returns the new `NamedValue`. The reference count of the returned `NamedValue` pseudo object is *not* incremented. Therefore, the caller should not release the returned reference when no longer needed, nor assign it to a `_var` variable.

Notes CORBA compliant.

CORBA::NVList::add_value()

Synopsis

```
NamedValue_ptr add_value(const char* item_name,
   const Any& value, Flags item_flags,
   Environment& env = default_environment);
```

Description Creates a NamedValue with name, value and flags initialised and adds it to the list.

Parameters

item_name	Name of item.
value	Value of item.
item_flags	Item flags (ARG_IN, ARG_OUT, ARG_INOUT).

Return Value Returns the new NamedValue. The reference count of the returned NamedValue pseudo object is *not* incremented. Therefore, the caller should not release the returned reference when no longer needed, nor assign it to a _var variable.

Notes CORBA compliant.

CORBA::NVList::add_item_consume()

Synopsis

```
NamedValue_ptr add_item_consume(char* item_name,
   Flags item_flags);
```

Description Creates a NamedValue with name and flags initialised, and adds it to the list. The char* parameter is consumed by the *NVList*. The caller may not access this data after it has been passed to this function.

Parameters

item_name	Name of item.
item_flags	Item flags (ARG_IN, ARG_OUT, ARG_INOUT).

Return Value Returns the new NamedValue. The reference count of the returned NamedValue pseudo object is *not* incremented. Therefore, the caller should not release the returned reference when no longer needed, nor assign it to a _var variable.

Notes CORBA compliant.

CORBA::NVList::add_value_consume()

Synopsis

```
NamedValue_ptr add_value_consume(char* item_name,
   Any* item_name,
   Flags item_flags);
```

Description Creates a NamedValue with name, values and flags initialised, and adds it to the list. The char* and the Any* parameters are consumed by the NVList. The caller may not access this data after it has been passed to this function. The caller should use the NamedValue::value () operation to modify the value attribute of the underlying NamedValue, if desired.

Parameters

item_name	Name of item.
item_value	Value of item.
item_flags	Item flags (ARG_IN, ARG_OUT, ARG_INOUT).

Return Value Returns the new NamedValue. The reference count of the returned NamedValue pseudo object is *not* incremented. Therefore, the caller should not release the returned reference when no longer needed, nor assign it to a _var variable.

Notes CORBA compliant.

CORBA::NVList::count()

Synopsis

```
ULong count(
   Environment& env = default_environment) const;
```

Description Returns the number of elements in the NVList.

Notes CORBA compliant.

CORBA::NVList::IT_create()

Synopsis

```
static NVList_ptr IT_create(
   Environment& env = default_environment);
static NVList_ptr IT_create(ULong,
   Environment& env = default_environment);
static NVList_ptr IT_create(const NVList&,
```

```
    Environment& env = default_environment);
```

Description For consistency with other pseudo object types for which there is no CORBA specified way in the current C++ mapping to obtain an object reference, Orbix provides the `IT_create()` functions for class `NVList`. To ensure memory management consistency, you should not use the C++ `new` operator to create an `NVList`.

Refer to the corresponding constructors for details of the parameters to `IT_create()`.

Notes Orbix specific. See `CORBA::ORB::create_list()` and `CORBA::ORB::create_operation_list()` for CORBA compliant ways of creating an `NVList`.

See Also `CORBA::ORB::create_list()`
`CORBA::ORB::create_operation_list()`

`NVList` constructors.

CORBA::NVList::item()

Synopsis

```
NamedValue_ptr item(ULong index,
    Environment& env = default_environment);
```

Description Returns the list item at the given index. The first item is at index `0`.

Exceptions Raises a `Bounds` exception if `index` is out of range.

Notes CORBA compliant.

CORBA::NVList::remove()

Synopsis

```
Status remove(ULong index,
    Environment& env = default_environment);
```

Description Removes the item at the given index. The first item is at index `0`.

Exceptions Raises a `Bounds` exception if `index` is out of range.

Notes CORBA compliant.

CORBA::NVListIterator

Synopsis Defines a C++ iterator for `CORBA::NVList` that returns the `NamedValues` in the list.

Orbix

```
// C++
class  NVListIterator {
public:
   NVListIterator();
   NVListIterator(NVList_ptr l);

   void setList(NVList_ptr l);
   NamedValue_ptr operator()();
};
```

Notes Orbix specific.

See Also `CORBA::NVList`
`CORBA::NamedValue`

CORBA::NVListIterator::NVListIterator()

Synopsis

```
NVListIterator();
```

Description Constructor. The iterator may be associated with an `NVList` using `setList()`.

Notes Orbix specific.

See Also `CORBA::NVListIterator::setList()`

Other `NVListIterator` constructor.

CORBA::NVListIterator::NVListIterator()

Synopsis `NVListIterator(NVList_ptr l);`

Description Constructor. Creates an iterator for `NVList l`.

Notes Orbix specific.

See Also Other `NVListIterator` constructor.

CORBA::NVListIterator::operator()()

Synopsis `NamedValue_ptr operator()();`

Description When called, successively returns each of the `NamedValue` elements in the `NVList` over which it iterates.

Notes Orbix specific.

CORBA::NVListIterator::setList()

Synopsis `setList(NVList_ptr l);`

Description Sets the iterator to the start of list `l`. The list `l` is not copied.

Notes Orbix specific.

CORBA::Object

Synopsis

`CORBA::Object` is the base class for all IDL C++ classes. Each BOAImpl class and each TIE class inherits from an IDL C++ class and hence also from `CORBA::Object`. On the client side, the functions of `CORBA::Object` are called on a proxy (unless collocation is set); on the server side, they are called on the real object.

All objects of type `CORBA::Object` hold their own full object reference in their member data. `CORBA::Object` provides functions to retrieve object reference fields in string format and to convert between object references and strings. It also provides functions to manipulate per-object filters, create `Request` objects for the DII and so on. The `is_nil()` and `release()` operations of interface `Object` are provided in the CORBA namespace in the mapped C++ class. All other operations have leading underscores in the C++ mapping.

CORBA

```
// IDL
interface Object {
   boolean is_nil();
   Object duplicate();
   void release();
   ImplementationDef get_implementation();
   InterfaceDef get_interface();
   Status create_request(
      in Context ctx,
      in Identifier operation,
      in NVList arg_list,
      in NamedValue result,
      out Request request,
      in Flags req_flags);
};
```

Orbix

```
// C++
typedef char* Identifier;

class Object {
public:
   ImplementationDef_ptr _get_implementation(
      Environment& env = default_environment) ;
```

```
InterfaceDef_ptr _get_interface(
   Environment& env = default_environment);

Request_ptr _request(
   Identifier operation,
   Environment& env = default_environment);

Status _create_request(
   Context_ptr ctx,
   const char* operation,
   NVList_ptr arg_list,
   NamedValue_ptr& result,
   Request_ptr& request,
   Flags req_flags,
   Environment& env = default_environment);

Boolean _is_a(const char* logical_type_id,
   Environment &env = default_environment);

Boolean _non_existent(Environment &env =
      default_environment);

Boolean _is_equivalent(const Object_ptr obj,
   Environment& env = default_environment);

ULong _hash(ULong maximum,
   Environment& env=IT_chooseDefaultEnv ));

Object(Boolean normal = false);
Object(const Object&);
Object(const Object_ptr);

const Object& operator=(const Object&);

virtual ~Object();

Object(const char*);

Object(const char* host, const char* impl,
   const char* marker, const char* intfHost,
   const char* intfImpl,
   const char* intfMarker);
```

```
    Identifier _object_to_string(
       Environment& env = default_environment);

    const char* _host(
       Environment& env = default_environment) const;

    const char* _implementation(
       Environment& env = default_environment) const;

    const char* _marker(
       Environment& env = default_environment) const;
    Boolean _marker(const char*,
       Environment& env = default_environment);

    const char* _interfaceHost(
       Environment& env = default_environment) const;

    const char* _interfaceImplementation(
    Environment& env = default_environment) const;

    const char* _interfaceMarker(
       Environment& env = default_environment) const;

    Boolean _isNullProxy(
       Environment& env = default_environment) const;

    Boolean _isNull(
       Environment& env = default_environment) const;

    void* _attachPre(void* b);
    void* _attachPost(void* b);
    void* _getPre() const;
    void* _getPost() const;
    virtual void* _deref();

#ifdef _REENTRANT
    Boolean _enableInternalLock(Boolean,
       Environment& env = default_environment);
#endif

#ifdef WANT_ORBIX_FDS
    int _fd (Environment& env = default_environment) const;
#endif
```

```
    virtual LoaderClass* _loader(
       Environment& env = default_environment) const;

    virtual void _save(
       Environment& env = default_environment);

    virtual Boolean _isRemote(
       Environment& env = default_environment) const;

    void _closeChannel(Environment& env =
       default_environment);

    Boolean _hasValidOpenChannel(Environment& env =
       default_environment);

    ULong _refCount(
       Environment& env = default_environment) const;

    static Object_ptr _duplicate(
       Object_ptr obj,
       Environment& env = default_environment);
    static Object_ptr _nil(
       Environment& env = default_environment);
};
```

Notes CORBA compliant.

CORBA::Object::Object()

Synopsis `Object(Boolean normal = false);`

Description Default constructor. If the parameter `normal` is set to `true` a null proxy is created.

Notes Orbix specific. You should not normally need to use this function.

See Also Other `Object` constructors.

CORBA::Object::Object()

Synopsis `Object(const Object& obj);`

Description Copy constructor.

Notes Orbix specific.

See Also Other `Object` constructors.

CORBA::Object::Object()

Synopsis `Object(const Object_ptr obj_ptr);`

Description Conversion from an `Object_ptr`.

Notes Orbix specific.

See Also Other `Object` constructors.

CORBA::Object::Object()

Synopsis `Object(const char* obj_ref_string);`

Description Conversion from a stringified object reference. An Orbix stringified object reference has the form:

```
:\host:serverName:marker:IFR_host:IFR_Server:
interfaceMarker
```

Refer to `CORBA::ORB::object_to_string()` for an explanation of these fields.

This constructor is normally used with the DII where it is not necessary to link in the generated code for the IDL C++ class.

If the string `obj_ref_string` is not a valid stringified object reference, Orbix creates a null object.

Notes Orbix specific. The CORBA compliant version of this function is `CORBA::ORB::string_to_object()`.

See Also

```
CORBA::BOA::create()
CORBA::ORB::string_to_object()
CORBA::Object::_isNull()
```

Other `Object` constructors.

CORBA::Object::Object()

Synopsis

```
Object(const char* host,
   const char* serverName,
   const char* marker,
   const char* IFR_host,
   const char* IFR_server,
   const char* interfaceMarker);
```

Description Constructs an object from the strings given as arguments. Note that an object created using this constructor cannot subsequently be narrowed using `_narrow()`; you should use the CORBA compliant function `CORBA::ORB::string_to_object()` instead.

Parameters

`host`	The host name of the target object.
`serverName`	The name of the target object's server.
`marker`	The object's marker name.
`IFR_host`	The name of a host running an Interface Repository that stores the target object's IDL definition.
`IFR_server`	The string "IFR".
`interfaceMarker`	The target object's true (most derived) interface.

Notes Orbix specific. The CORBA compliant version of this function is `CORBA::ORB::string_to_object()`.

See Also

`CORBA::ORB::string_to_object()`
`CORBA::ORB::object_to_string()`
`CORBA::BOA::create()`

Other `Object` constructors.

CORBA::Object::~Object()

Synopsis

```
virtual ~Object();
```

Description Destructor.

Notes Orbix specific.

CORBA::Object::operator=()

Synopsis `const Object& operator=(const Object& obj);`

Description Assignment operator. Copies the object `obj` to self. The reference count of self is decremented. The reference count of `obj` is incremented.

Return Value Returns a reference to self.

Notes Orbix specific.

CORBA::Object::_attachPost()

Synopsis `void* _attachPost(void* f);`

Description Attaches a per-object post-filter to the target object. Attaching a post-filter to an object that already has a post-filter causes the old filter to be removed and the new one attached. To attach a chain of per-object post-filters to an object, you can use `_attachPost()` to attach the first post-filter, and then you can be use it again to attach a post-filter to the first filter and so on. Thus, `_attachPost()` should be called on *filter* objects to create a chain.

Parameters

`f` A pointer to a filter object. The dynamic type of `f` should be a class that implements the IDL interface of the object on which `_attachPost()` is invoked.

Return Value Returns a pointer to the previous pre-filter, if any, attached to the object.

Notes Orbix specific.

See Also
`CORBA::Object::_getPost()`
`CORBA::Object::_attachPre()`
`CORBA::Filter`

CORBA::Object::_attachPre()

Synopsis

```
void* _attachPre(void* f);
```

Description

Attaches a per-object pre-filter to the target object. Attaching a pre-filter to an object that already has a pre-filter causes the old filter to be removed and the new one attached. To attach a chain of per-object pre-filters to an object, you can use `_attachPre()` to attach the first pre-filter, and then you can use it again to attach a pre-filter to the first filter and so on. Thus, `_attachPre()` should be called on *filter* objects to create a chain.

Parameters

`f` A pointer to a filter object. The dynamic type of `f` should be a pointer to an object that implements the IDL interface of the object on which `_attachPre()` is invoked.

Return Value

Returns a pointer to the previous pre-filter, if any, attached to the object.

Exceptions

If a per-object pre-filter raises an exception, the operation invocation call is not passed to the target object. Normally this exception is returned to the client to indicate the outcome of the invocation. However, if the pre-filter raises the exception `CORBA::FILTER_SUPPRESS` no exception is returned to the caller—the caller cannot tell that the operation call has not been processed as normal (the output and input/output parameters and the return value are those passed back by the pre-filter object).

Notes

Orbix specific.

See Also

`CORBA::Object::_getPre()`
`CORBA::Object::_attachPost()`
`CORBA::Filter`

CORBA::Object::_closeChannel()

Synopsis

```
void _closeChannel(Environment& env =
     default_environment);
```

Description Closes the underlying communications connection to the server. This function is intended as an optimization so that a connection between a client and server that is rarely used is not kept open for long periods between uses.

The channel is automatically reopened when an invocation is made on the object. If the client holds proxies for other objects in the same server, the channel is closed for all such proxies; it is automatically reopened when a subsequent invocation is made on one of these proxies.

Notes Orbix specific.

See Also `CORBA::Object::_hasValidOpenChannel()`
`CORBA::ORB::closeChannel()`

CORBA::Object::_create_request()

Synopsis

```
Status _create_request(
   Context_ptr ctx,
   const char* operation,
   NVList_ptr arg_list,
   NamedValue_ptr& result,
   Request_ptr& request,
   Flags req_flags,
   Environment& env = default_environment);
```

Description Constructs a `CORBA::Request` object. Refer to `CORBA::Object::_request()` for an alternative way to create a `Request`.

Parameters

`ctx`	Context object, if any, to be sent in the `Request`. If the `ctx` argument to `_create_request()` is a nil `Context` object reference, the `Context` may be added by calling the `ctx()` function on the `Request` object.
`operation`	The name of the operation.

arg_list	The parameters (each parameter in the list is of type NamedValue). If the arg_list argument of the constructor is zero, you must add the arguments by calling the arguments() function on the Request object—one call to arguments() for each argument that is to be passed.
result	Contains the return value of the operation.
req_flags	If the flag CORBA::OUT_LIST_MEMORY is set, the storage associated with out parameters is assumed to be supplied by the caller. Otherwise, storage associated with out parameters is dynamically allocated.

Return Value Returns 1 (true) if successful, 0 (false) otherwise.

Notes CORBA compliant. This function is part of the Dynamic Invocation Interface.

See Also
CORBA::Object::_request()
CORBA::Request
CORBA::Context
CORBA::Flags
CORBA::Request::arguments()
CORBA::NVList
CORBA::NamedValue

CORBA::Object::_deref()

Synopsis
```
virtual void* _deref();
```

Description When the BOAImpl approach is used, this function returns a pointer to the BOAImpl base class of the target object's implementation object.

In the TIE approach, two objects exist: the TIE object and the true object, and the pointer returned is that of the true object.

You can redefine this function in the implementation class to allow casting from an interface to an implementation class. C++ prevents a simple cast because virtual inheritance is used in the inheritance hierarchy in the BOAImpl approach (in the TIE approach, the cast down is illegal anyway, because an implementation class does not inherit from its IDL C++ class). For example:

```
// C++
// TIE Implementation.
// Account is the interface class,
// Account_i is the implementation class.
Account_ptr p;
Account_i* p_i = (Account_i*)p;  // Illegal.
```

You may wish to use a function defined on an implementation class but not in the IDL interface. To do so requires a pointer to the implementation class. You can achieve the cast by redefining the function `_deref()` in the implementation class:

```
// C++
class Account_i : public virtual AccountBOAImpl {
   ....
   virtual void* _deref() { return this; }
};
```

You can then achieve the cast as follows:

```
// C++
Account_ptr p = . . . .;
Account_i* p_i = (Account_i*) DEREF(p);
```

The `DEREF` macro calls the `_deref()` function. If `_deref()` is not defined by `Account_i`, then it inherits an implementation that returns a pointer to the BOAImpl object. (The `DEREF` macro on a TIE returns a pointer to the true object.)

You could remove the need for the cast by defining the extra functions as IDL operations in the IDL interface. However, this would make these operations available to remote processes, possibly against the requirements of the application. Also, some C++ functions cannot be translated simply into IDL.

Notes Orbix specific.

CORBA::Object::_duplicate()

Synopsis

```
static Object_ptr _duplicate(Object_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns a reference to self.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::Object::_enableInternalLock()

Synopsis

```
#ifdef _REENTRANT
Boolean _enableInternalLock(Boolean isEnabled,
   Environment& env = default_environment);
#endif
```

Description This function is applicable only to multi-threaded versions of Orbix.

In Orbix, each `CORBA::Object` includes an internal read/write lock that is used by Orbix to synchronise concurrent access to the Orbix specific state of that object. A read lock is acquired, for example, if a thread calls the `CORBA::Object::_refCount()` member function. Similarly a write lock is acquired for the duration of the `_duplicate()` static member function on each IDL C++ class. However this read/write lock is not acquired when any application specific state of that object is accessed. For example, if an implementation class derives from a BOAImpl class that in turn derives (indirectly) from `CORBA::Object` adds member variables, or if a smart proxy does likewise, this additional state is not protected by the internal `CORBA::Object` read/write lock.

In principle, the internal `CORBA::Object` read/write lock could be made available to derived BOAImpl classes. In practice, however, there is a possibility that deadlock situations might occur because of interactions between Orbix's internal use of this lock, and the use made by you in a derived class. For this reason, access to the internal lock is discouraged.

Sometimes you may be certain that the Orbix specific state of a particular `CORBA::Object` instance will never be simultaneously accessed by different threads. This occurs, for example, if the instance is allocated automatically (on a

thread stack), rather than on the heap; or if the semantics of the application are such that concurrent access can never occur. In these cases, the cost of acquiring and releasing the read/write lock in the Orbix member functions (such as `_duplicate()` and `_refCount()`) may be unwarranted. These costs can be controlled by calling `_enableInternalLock()`.

Disable the locking code in a specific `CORBA::Object` instance with extreme caution. Ensure that you release application-level locks if you wish to continue after an exception is raised.

Parameters

`isEnabled`	If set to `1` (true), internal locking is enabled; if set to `0` (false), locking is disabled.

Return Value Returns the previous setting.

Notes Orbix specific.

CORBA::Object::_fd()

Synopsis

```
#ifdef WANT_ORBIX_FDS
int _fd(Environment& env = default_environment) const;
#endif
```

Description Finds the UNIX file descriptor associated with the TCP/IP connection to a target remote object. It is applicable only to proxy objects.

When using libraries or systems that depend on the UNIX `select()` system call you may need to know which file descriptors are scanned by Orbix to detect incoming events: a common use is to merge use of Orbix with X-Windows event handling. The set of such file descriptors is returned by `CORBA::BOA::getFileDescriptors()`.

When used together with callbacks for connections, it allows you to work out, for example, when a connection to a particular remote object has been lost.

This function is defined only if the following preprocessor directive is issued in the C++ file before including `CORBA.h`:

```
#define WANT_ORBIX_FDS
```

Return Value Returns the value `-1` if an error occurs or if the object is a real object rather than a proxy.

Notes Orbix specific.

See Also `CORBA::BOA::getFileDescriptors()`

CORBA::Object::_get_implementation()

Synopsis

```
ImplementationDef_ptr _get_implementation(
   Environment& env = default_environment);
```

Description Finds the name of the target object's server as registered in the Implementation Repository. For a local object in a server, this is that server's name if it is known, otherwise it is the process identifier of the server process. For an object created in the client, it is the process identifier of the client process. The server name is known if the server is launched by the Orbix daemon; or if it is launched manually and the server name is passed to `CORBA::BOA::impl_is_ready()` or set by `CORBA::ORB::setServerName()`.

Notes CORBA compliant.

See Also `CORBA::Object::_implementation()`

CORBA::Object::_get_interface()

Synopsis

```
InterfaceDef_ptr _get_interface(
   Environment& env = default_environment);
```

Description Returns a reference to an object in the Interface Repository that describes the interface of this object.

Notes CORBA compliant.

See Also `CORBA::InterfaceDef`

CORBA::Object::_getPost()

Synopsis
```
void* _getPost() const;
```

Description Gets the object's post-filter.

Return Value Returns a pointer to the object's post-filter.

Notes Orbix specific.

See Also
```
CORBA::Object::_attachPost()
CORBA::Object::_getPre()
CORBA::Filter
```

CORBA::Object::_getPre()

Synopsis
```
void* _getPre() const;
```

Description Gets the object's pre-filter.

Return Value Returns a pointer to the object's pre-filter.

Notes Orbix specific.

See Also
```
CORBA::Object::_attachPre()
CORBA::Object::_getPost()
CORBA::Filter
```

CORBA::Object::_hash()

Synopsis
```
ULong _hash(ULong maximum,
   Environment& env=IT_chooseDefaultEnv())
```

Description Every object reference has an internal identifier associated with it—a value that remains constant throughout the lifetime of the object reference.

The `_hash()` function returns a hashed value determined via a hashing function from the internal identifier. Two different object references may yield the same hashed value. However, if two object references return different hash values, these object references are known to be for different objects.

The `_hash()` function allows a developer to partition the space of object references into sub-spaces of potentially equivalent object references.

Parameters

`maximum`	The maximum value that is to be returned from the hash function. For example, setting maximum to 7 partitions the object reference space into a maximum of 8 sub-spaces (because the lower bound of the function is 0).

Return Value A hashed value for the object reference in the range `0...maximum`.

Notes CORBA compliant.

CORBA::Object::_hasValidOpenChannel()

Synopsis

```
Boolean _hasValidOpenChannel(Environment& env =
      default_environment)
```

Description Determines whether the communications channel between the client and the server is open.

This channel can be closed to avoid having an unnecessary connection left open for long periods between an idle client and server. The channel is automatically reopened when an invocation is made on the object.

Notes Orbix specific.

See Also `CORBA::Object::_closeChannel()`

CORBA::Object::_host()

Synopsis

```
const char* _host(
   Environment& env = default_environment) const;
```

Description Returns the name of the host on which the target object is located.

Notes Orbix specific.

CORBA::Object::_implementation()

Synopsis

```
const char* _implementation(
   Environment& env = default_environment) const;
```

Description Finds the name of the target object's server as registered in the Implementation Repository. For a local object in a server, this is that server's name (if that server's name is known), otherwise it is the process' identifier. The server name is known if the server is launched by Orbix; or if it is launched manually and the server name is passed to `CORBA::BOA::impl_is_ready()` or `CORBA::BOA::obj_is_ready()` or set by `CORBA::ORB::setServerName()`.

Notes Orbix specific. The CORBA compliant version of this function is `CORBA::Object::_get_implementation()`.

See Also `CORBA::Object::_get_implementation()`

CORBA::Object::_interfaceHost()

Synopsis

```
const char* _interfaceHost(
   Environment& env = default_environment) const;
```

Description Finds the name of a host running an Interface Repository server that stores the target object's IDL definition.

Notes Orbix specific.

CORBA::Object::_interfaceImplementation()

Synopsis

```
const char* _interfaceImplementation(
   Environment& env = default_environment) const;
```

Description Returns the name of the Interface Repository server.

Notes Orbix specific.

CORBA::Object::_interfaceMarker()

Synopsis

```
const char* _interfaceMarker(
   Environment& env = default_environment) const;
```

Description Returns the name of the target object's interface.

Notes Orbix specific.

CORBA::Object::_is_a()

Synopsis

```
Boolean _is_a(const char* logical_type_id,
   Environment& env = CORBA::default_environment);
```

Description Determines if the target object is an instance of the type specified in `logical_type_id` or is an instance of a derived type of the type in `logical_type_id`.

Parameters

`logical_type_id`	The fully scoped name of the IDL interface. You must use an underscore ('_') rather than a scope operator ('::') to delimit scope in a name.

Return Value Returns 1 (true) if the object is an instance of the type specified by `logical_type_id` or if the type of the object is an instance of a derived type of that type. Returns 0 (false) otherwise.

Notes CORBA compliant.

See Also `CORBA::Object::_non_existent()`

CORBA::Object::_is_equivalent()

Synopsis

```
Boolean _is_equivalent(const Object_ptr obj,
   Environment& env = default_environment);
```

Description Tests if two object references are equivalent. Two objects are equivalent if they have the same object reference, or they both refer to the same object.

Parameters

`obj` The object to be compared for equivalence with the target object.

Return Value Returns `1` (true) if the object references definitely refer to the same object. A return value of `0` (false) does not necessarily mean that the object references are not equivalent—only that the ORB cannot confirm that they reference the same object.

Notes CORBA compliant.

See Also `CORBA::Object::_is_a()`

CORBA::Object::_isNull()

Synopsis

```
Boolean _isNull(
   Environment& env = default_environment) const;
```

Description If an object is created with an invalid object reference, for example by passing an invalid object reference string to the constructor:

```
Object(const char* obj_ref_string);
```

a null object is created. This function determines whether the invoked object is a null object.

Return Value Returns `true` if the object is a null object, `false` otherwise. This function also returns `true` if the invoked object is a null proxy.

Notes Orbix specific.

See Also `CORBA::Object::_isNullProxy()`
`CORBA::is_nil()`

CORBA::Object::_isNullProxy()

Synopsis

```
Boolean _isNullProxy(
   Environment& env = default_environment) const;
```

Description Tests if the object on which it is invoked is a null proxy. A null proxy is a proxy whose member functions propagate any exception passed to them. That is, if the `Environment` passed to an operation on a null proxy already references an exception, the function performs no action and returns the same `Environment`. For example, in the following code:

```
// C++
TRY {
   pPtr = <some operation call>;
   pPtr->op(IT_X);
}
CATCHANY {
   . . .
}
ENDTRY
```

`pPtr` may reference a null proxy if the operation call raises an exception.

Return Value Returns `true` value if the object is a null proxy and returns `false` otherwise.

Notes Orbix specific.

See Also `CORBA::is_nil()`

CORBA::Object::_isRemote()

Synopsis

```
virtual Boolean _isRemote(
   Environment& env = default_environment) const;
```

Description Determines whether or not an object reference is remote —that is, whether or not the object it references is in a different address space on the local or a remote host. It is virtual because it has a different implementation depending on whether the TIE or BOAImpl approach is used.

Return Value Returns `true` if the reference is to a remote object (that is, the target of the call is a proxy), returns `false` otherwise.

Notes Orbix specific.

See Also `CORBA::ORB::collocated()`

CORBA::Object::_loader()

Synopsis

```
virtual LoaderClass_ptr _loader(
   Environment& env = default_environment) const;
```

Description Finds the target object's loader. Orbix provides a default loader for every object. This function must be called on a real object in a server; calling it from a proxy has no effect.

Return Value Returns a pointer to the object's loader (which may be the default loader if no user-defined loader is provided).

Notes Orbix specific.

See Also `CORBA::LoaderClass`

CORBA::Object::_marker()

Synopsis

```
const char* _marker(
   Environment& env = default_environment) const;
```

Description Finds the target object's marker name.

Notes Orbix specific.

See Also `CORBA::Object::_marker(const char* marker)`

CORBA::Object::_marker()

Synopsis

```
Boolean _marker(const char* marker,
   Environment& env = default_environment);
```

Description Sets the target object's marker name.

If the chosen marker is already in use for an object with the same interface within the server, Orbix silently assigns a different marker to the object (and the other object with the original marker is unaffected).

Use this function with care. Every incoming request to a server is dispatched to the appropriate object within the server on the basis of the marker (automatically) included in the request. Thus if an object is made known to a remote client (via `_bind()`, or as a return value or an `out`/`inout` parameter of an operation), and the object's marker is subsequently altered within the server

by calling `_marker(const char*)`, a subsequent request from the remote client will fail because the client will have used the original value of the marker. Thus you should change the marker name of an object before knowledge of the existence of the object is passed from the server to any client.

See `CORBA::LoaderClass::rename()` for details of the algorithm executed by Orbix when `CORBA::Object::_marker()` is called.

Return Value Returns `true` if successful; returns `false` if marker is already in use within the process.

Notes Orbix specific.

See Also
`CORBA::Object::_marker()`
`CORBA::LoaderClass::rename()`

CORBA::Object::_nil()

Synopsis

```
static Object_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for an `Object`.

Notes CORBA compliant.

See Also
`CORBA::is_nil()`
`CORBA::Object::_isNullProxy()`
`CORBA::Object::_isNull()`

CORBA::Object::_non_existent()

Synopsis

```
Boolean _non_existent(Environment &env =
      default_environment);
```

Description Tests if the target object exists. Normally this function is invoked on a proxy and determines whether the real object still exists.

Return Value Returns `1` (true) if the object does not exist; returns `0` (false) otherwise. (It does not raise an exception if the object does not exist.)

Notes CORBA compliant.

CORBA::Object::_object_to_string()

Synopsis

```
Identifier _object_to_string(
   Environment& env = default_environment);
```

Description Converts the target object's reference to a string. An Orbix stringified object reference has the form:

```
:\host:serverName:marker:IFR_host:IFR_Server
:interfaceMarker
```

See `CORBA::ORB::object_to_string()` for an explanation of these fields.

Return Value Returns a stringified object reference.

Notes Orbix specific. See `CORBA::ORB::object_to_string()` for CORBA compliant version of this function.

See Also `CORBA::ORB::object_to_string()`

CORBA::Object::_refCount()

Synopsis

```
ULong _refCount(
   Environment& env = default_environment) const;
```

Description Finds the target object's current reference count.

Return Value If called on a proxy `_refCount()` returns the reference count of the proxy object. If called on the true object in the server, it returns the reference count of the server object.

Notes Orbix specific.

See Also `CORBA::Object::_duplicate()`
`CORBA::release()`

CORBA::Object::_request()

Synopsis

```
Request_ptr _request(Identifier operation,
      Environment& env = default_environment);
```

Description Constructs a `CORBA::Request` on the target object. This is the shorter form of `CORBA::Object::_create_request()`.

You can add arguments and contexts after construction using `CORBA::Request::arguments()` and `CORBA::Request::ctx()`.

Parameters

`operation`	The name of the operation.

Notes CORBA compliant.

See Also `CORBA::Object::_create_request()`

`CORBA::Request::arguments()`

`CORBA::Request::ctx()`

CORBA::Object::_save()

Synopsis

```
virtual void _save(
   Environment& env = default_environment);
```

Description Calls the `CORBA::LoaderClass::save()` function on the target object's loader. You must call the function `_save()` in the same address space as the target object: calling it in a client process—that is, on a proxy—has no effect.

Notes Orbix specific.

See Also `CORBA::LoaderClass`

CORBA::ORB

Synopsis

Class CORBA::ORB implements the OMG CORBA ORB pseudo interface and adds a number of functions specific to Orbix.

CORBA::ORB provides a set of functions that control Orbix from both the client and the server. These include operations to convert between strings and object references, and operations for use with the Dynamic Invocation Interface (DII). Additional Orbix specific functions allow clients have control over timeout duration, collocation control, assistance with interface matching, diagnostic levels and so on.

The functions on this class are invoked through the CORBA::Orbix object. In the client, this isa static object of class CORBA::ORB. On the server, it is a static object of class CORBA::BOA—a derived class of CORBA::ORB.

CORBA

```
// Pseudo IDL
// In module CORBA
pseudo interface ORB (
   typedef sequence<Request> RequestSeq;
   typedef string OAid;

   BOA BOA_init(inout arg_list argv,
      in OAid boa_identifier);

   string object_to_string(in Object obj);
   Object string_to_object(in string str);

   Status create_list(in long count,
      out NVList new_list);
   Status create_operation_list(
      in OperationDef oper, out NVList new_list);
   Status create_named_value(
      out NamedValue nmval);

   Status get_default_context(out Context ctx);

   Status create_environment(
      out Environment new_env);
```

```
   Status send_multiple_requests_oneway(
      in RequestSeq req);
   Status send_multiple_requests_deferred(
      in RequestSeq req);

   boolean poll_next_response();
   Status get_next_response(out Request req);
};
```

Orbix

```
// C++
class ORB : public IT_PseudoIDL {
public:
   static const ULong DEFAULT_TIMEOUT;
   static const ULong INFINITE_TIMEOUT;

   typedef string OAid;

   Object_ptr string_to_object(
      const char*,
      Environment& env = default_environment);

   Status create_list(Long count,
      NVList_ptr& new_list,
      Environment& env = default_environment) ;

   Status get_default_context(
      Context_ptr&,
      Environment& env = default_environment) ;

   Status create_operation_list(
      OperationDef_ptr,
      NVList_ptr&,
      Environment& env = default_environment) ;

   Status create_named_value(
      NamedValue_ptr&);

   Status create_environment(
      Environment_ptr& new_env,
      Environment& env = default_environment);
```

```
Status send_multiple_requests_oneway(
   const RequestSeq&,
   Environment& env = default_environment);

Status send_multiple_requests_deferred(
   const RequestSeq&,
   Environment& env = default_environment);

Status get_next_response(
   Request_ptr& req,
   Environment& env = default_environment);

Boolean poll_next_response(
   Environment& env = default_environment);

BOA_ptr BOA_init(int& argc,
   char** argv,
   OAid oa_identifier,
   Environment &env=IT_chooseDefaultEnv());

ObjectIdList_ptr list_initial_services(
   CORBA::Environment& env = IT_chooseDefaultEnv());

Object_ptr resolve_initial_references(
   ObjectId identifier,
   CORBA::Environment&env=IT_chooseDefaultEnv());

Object_ptr string_to_object(
   const char* host, const char* impl,
   const char* marker, const char* intfHost,
   const char* intfImpl, const char* intfMarker,
   Environment& env = default_environment);

OrbixIOCallback registerIOCallback(
   OrbixIOCallback, OrbixIOCallbackType);

ULong defaultTxTimeout(
   ULong val=INFINITE_TIMEOUT,
   Environment &env=default_environment);

Boolean collocated(
   Environment& env = default_environment) const;
Boolean collocated(
```

```
    Boolean turnOn,
    Environment& env = default_environment);
Boolean nativeExceptions(Boolean turnOn,
    Environment& env = default_environment);
Boolean nativeExceptions(Environment& env =
    default_environment) const;

const char* myHost(
    Environment& env = default_environment) const;
const char* myServer(
    Environment& env = default_environment) const;

void reSizeObjectTable(ULong,
    Environment& env = default_environment);

void setServerName(const char* serverName,
    Environment& env = default_environment);

Boolean isBaseInterfaceOf(const char* derived,
    const char* maybeABase,
    Environment& env = default_environment);
void baseInterfacesOf(IT_StringSeq&,
    const char* derived,
    Environment& env = default_environment);

Short setDiagnostics(Short level,
    Environment& env = default_environment);

Boolean pingDuringBind(Boolean,
    Environment& env = default_environment);

Boolean optimiseProtocolEncoding(Boolean,
    Environment& env = default_environment);

ULong connectionTimeout(unsigned long,
    Environment& env = default_environment);

Boolean abortSlowConnects(Boolean value);

Boolean eagerListeners(
    Boolean value,
    Environment& env = default_environment);
Boolean eagerListeners(
```

```
        Environment& env = default_environment);

    ULong maxConnectRetries(ULong,
        Environment& env = default_environment);

    Boolean noReconnectOnFailure();

    Boolean resortToStatic(Boolean,
        Environment& env = default_environment);

    Boolean closeChannel(int fd,
        Environment& env = IT_chooseDefaultEnv());

    IT_PFV  set_unsafeDelete(IT_PFV);

    CORBA::Boolean bindUsingIIOP(Environment&
        env=default_environment) const;
    CORBA::Boolean bindUsingIIOP(CORBA::Boolean on
        Environment& env=default_environment);
    CORBA::Boolean supportBidirectionalIIOP(
        CORBA::Boolean on,
        Environment& env=default_environment);

    unsigned long maxFDsPerConnectionThread();
    void maxFDsPerConnectionThread(unsigned long max);
    unsigned long maxConnectionThreads();
    void maxConnectionThreads(unsigned long max);

    CORBA::Boolean registerIOCallbackObject(
        unsigned char eventType, IT_IOCallback *obj);
    CORBA::Boolean unregisterIOCallbackObject(
        unsigned char eventType, IT_IOCallback *obj);

#ifdef WANT_ORBIX_FDS
    void addForeignFDSet(fd_set& theFDset, unsigned char aState);
    void addForeignFD(const int fd, unsigned char aState);
    void removeForeignFD(
        const int fd, unsigned char aState);
    void removeForeignFDSet(
        fd_set& theFDset, unsigned char aState);
```

```
    fd_set getForeignFDSet() const;
    fd_set getSelectableFDSet() const;
    fd_set getAllOrbixFDs() const;
    CORBA::Boolean isOrbixFD(int fd);
    CORBA::Boolean isForeignFD(int fd,
       unsigned char mask=FD_FOREIGN_WRITE
       | FD_FOREIGN_READ | FD_FOREIGN_EXCEPT);
    CORBA::Boolean isOrbixSelectableFD(int fd);
#endif

    static unsigned int GetConfigValue(
       const char* name, char*& value);

    static unsigned int SetConfigValue(
       const char* name, char* value);

    static void PlaceCVHandlerBefore(
       const char* before, const char* after);

    static void PlaceCVHandlerAfter(const char* after,
       const char* before);

    static void ActivateCVHandler(const char* identifier);

    static void DeactivateCVHandler(const char* identifier);

    static void ReinitialiseConfig();

    static void Output(char*string, int level = 1);
    static void Output(Environment& e, int level = 1);
    static void Output(SystemException* x, int level = 1);
    static void ActivateOutputHandler(const char*identifier);
    static void DeactivateOutputHandler(
       const char*identifier);

    _IDL_SEQUENCE_octet * makeOrbixObjectKey(
                const char * host, const char * serverName,
                const char * interfaceName,
                Environment& env = default_environment);
```

```
    string makeIOR(char * host, unsigned short port,
                   ObjectKey objKey, char * typeID,
                   Environment &env=IT_chooseDefaultEnv ());

    Boolean useTransientPort(Boolean value)

    void useHostNameInIOR(Boolean val,
         Environment &env=IT_chooseDefaultEnv ());

};
```

Notes Orbix specific.

See Also `CORBA::BOA`

CORBA::ORB::abortSlowConnects()

Synopsis

```
Boolean abortSlowConnects(
   Boolean value);
```

Description In cases where a node is known to the local node, but down or unreachable, a TCP/IP connect can block for a considerable time. If `value` is set to `true`, `abortSlowConnects()` aborts TCP/IP connection attempts which exceed the time-out specified in `CORBA::ORB::connectionTimeout()`. The default value for this time-out is 30 seconds.

Use this function selectively as it requires the use of `SIGALRM` on UNIX platforms.

Return Value Returns the previous setting.

Notes Orbix specific. It is not yet available on Multi-Thread Orbix (Orbix-MT).

See Also `CORBA::ORB::connectionTimeOut()`

CORBA::ORB::addForeignFD()

Synopsis

```
void addForeignFD(const int fd, unsigned char aState);
```

Description

Orbix allows you to add foreign file descriptors to the Orbix event loop. Orbix then monitors these file descriptors when you call an Orbix event processing function, such as `CORBA::ORB::processEvents()`. To receive callbacks on those foreign file descriptors, you must implement a class that inherits from `CORBA::IT_IOCallback`.

The function `CORBA::ORB::addForeignFD()` allows you to add a foreign file descriptor to the Orbix event processing loop.

Parameters

`fd`	The file descriptor to be added to the Orbix event processing loop.
`aState`	Indicates the type of events for which the file descriptor should be monitored. This can be `FD_FOREIGN_READ`, `FD_FOREIGN_WRITE`, and `FD_FOREIGN_EXCEPT`, or a logical combination of these values.

Notes

Orbix specific.

See Also

`CORBA::ORB::addForeignFDSet()`
`CORBA::ORB::removeForeignFD()`
`CORBA::ORB::removeForeignFDSet()`

CORBA::ORB::addForeignFDSet()

Synopsis

```
void addForeignFDSet(
   fd_set& fds, unsigned char aState);
```

Description

Orbix allows you to add foreign file descriptors to the Orbix event loop. Orbix then monitors these file descriptors when you call an Orbix event processing function, such as `CORBA::ORB::processEvents()`. To receive callbacks on those foreign file descriptors, you must implement a class that inherits from `CORBA::IT_IOCallback`.

The function `CORBA::ORB::addForeignFDSet()` allows you to add a set of foreign file descriptors to the Orbix event processing loop.

Parameters

`fds`	The file descriptor set to be added to the Orbix event processing loop.
`aState`	Indicates the type of events for which the file descriptors should be monitored. This can be `FD_FOREIGN_READ`, `FD_FOREIGN_WRITE`, and `FD_FOREIGN_EXCEPT`, or a logical combination of these values.

Notes Orbix specific.

See Also `CORBA::ORB::addForeignFD()`

CORBA::ORB::ActivateCVHandler()

Synopsis

```
static void ActivateCVHandler(const char* identifier);
```

Description Activates the configuration value handler identified in `identifier`.

The function `ReinitialiseConfig()` must be called before modifications by this function take effect.

Notes Orbix specific.

See Also

```
CORBA::ORB::ReinitialiseConfig()
CORBA::ORB::DeactivateCVHandler()
CORBA::UserCVHandler
CORBA::ExtraRegistryCVHandler
CORBA::ExtraConfigFileHandler
```

CORBA::ORB::ActivateOutputHandler()

Synopsis

```
static void ActivateOutputHandler(
   const char* identifier);
```

Description Activates the output handler specified in `identifier`.

Notes Orbix specific.

See Also `CORBA::UserOutput`

CORBA::ORB::baseInterfacesOf()

Synopsis

```
void baseInterfacesOf(IT_StringSeq& interfaces,
   const char* derived,
   Environment& env = default_environment);
```

Description Returns an IDL sequence of strings in the parameter `interfaces`, listing the base interfaces of `derived`. The interface `derived` is returned in the sequence, since it is considered a base interface of itself.

Parameters

`interfaces`	The caller is responsible for deleting the returned IDL sequence.

Notes Orbix specific.

See Also `CORBA::ORB::isBaseInterfaceOf()`

CORBA::ORB::bindUsingIIOP()

Synopsis

```
CORBA::Boolean bindUsingIIOP(
   Environment& env=default_environment) const;
```

Description Orbix clients can call the function `_bind()` to obtain a reference to a distributed object. By default, `_bind()` uses the CORBA Internet Inter-ORB Protocol (IIOP) when attempting to return an object reference. This function indicates whether `_bind()` currently uses IIOP or the non-standard Orbix communications protocol.

Return Value Returns a non-zero value (true) if `_bind()` currently uses IIOP. Returns zero (false) otherwise.

Notes Orbix specific.

CORBA::ORB::bindUsingIIOP()

Synopsis

```
CORBA::Boolean bindUsingIIOP(CORBA::Boolean on,
   Environment& env=default_environment);
```

Description This function allows you to specify whether the Orbix `_bind()` function should use the CORBA Internet Inter-ORB Protocol (IIOP) or the non-standard Orbix communications protocol. By default, `_bind()` uses IIOP.

Note: The `bindUsingIIOP()` function allows you to set at start of program the protocol used by `_bind()`. If you use `bindUsingIIOP()` to switch from the Orbix protocol to IIOP between successive binds to the same object, it has no effect.

Parameters

on	A non-zero value (true) specifies that `_bind()` should use IIOP. A zero value (false) specifies that `_bind()` should use the Orbix protocol.

Return Value Returns the previous setting.

Notes Orbix specific.

CORBA::ORB::BOA_init()

Synopsis

```
BOA_ptr BOA_init(int& argc,
   char** argv,
   OAid oa_identifier,
   Environment &env=IT_chooseDefaultEnv());
```

Description Initialises a server's connection to the Basic Object Adapter (BOA). A compliant program first obtains a pointer to the ORB using `CORBA::ORB_init()` as follows:

```
// C++
CORBA::ORB_ptr orb =
   CORBA::ORB_init(argc, argv, "Orbix");
CORBA::BOA_ptr boa =
   orb->BOA_init(argc, argv, "Orbix_BOA");
```

In Orbix, the object reference returned by these functions is a reference to the `CORBA::Orbix` object.

Parameters

argc	The number of arguments in `archive`.

argv	A sequence of option or configuration strings that are used if oa_identifier is a null string. Each string is of the form: -OA<suffix> <value> where <suffix> is the name of the option being set, and <value> is the value to which the option is to be set. Any string not in this format is ignored. An example parameter to identify the Orbix ORB's BOA is: -OAid Orbix_BOA
oa_identifier	A string identifying the object adapter. The string "Orbix_BOA" identifies the Orbix ORB's Basic Object Adapter. If this parameter is null, the content of argv is checked.

Return Value An object reference to a Basic Object Adapter. In Orbix, it is not necessary to call this function before using the ORB since Orbix automatically initialises a client or server's connection, making access to the ORB available through the CORBA::Orbix object.

Notes CORBA compliant.

See Also CORBA::ORB_init()

CORBA::ORB::closeChannel()

Synopsis

```
Boolean closeChannel(int fd,
   Environment& env = IT_chooseDefaultEnv());
```

Description Requests Orbix to close the communications channel to the server. This function is intended as an optimization so that a connection between an idle client and server is not kept open for long periods between uses.

The channel is automatically reopened when an invocation is made on an object in the server.

Parameters

fd	The file descriptor identifying the channel.

Notes Orbix specific.

See Also
```
CORBA::Object::_hasValidOpenChannel()
CORBA::Object::_closeChannel()
CORBA::Object::_fd()
```

CORBA::ORB::collocated()

Synopsis
```
Boolean collocated(
   Environment& env = default_environment) const;
```

Description Determines whether collocation is set. Binding to objects outside of the current process' address space is prevented if collocation is set. If collocation is not set, the lookup mechanism allows binding outside of the current address space. By default, collocation is not set.

Note: If you call `collocated(1)` before calling `impl_is_ready()`, the `impl_is_ready()` call returns immediately without contacting the Orbix daemon.

Return Value Returns `true` if collocation is set and returns `false` otherwise.

Notes Orbix specific.

See Also
```
CORBA::ORB::collocated(CORBA::Boolean turnOn)
CORBA::Object::_isRemote()
```

CORBA::ORB::collocated()

Synopsis
```
Boolean collocated(Boolean turnOn,
   Environment& env = default_environment);
```

Description Enforces collocation if `turnOn` is set to `true`. If collocation is enforced, binding to objects outside of the current process' address space is prevented. If set to `false`, the lookup mechanism allows binding outside of the current address space. By default, collocation is not set.

Return Value Returns the previous setting.

Notes Orbix specific.

See Also `CORBA::ORB::collocated()`
`CORBA::Object::_isRemote()`

CORBA::ORB::connectionTimeout()

Synopsis

```
ULong connectionTimeout(ULong timeout,
   Environment& env = default_environment);
```

Description Sets the time limit, in seconds, for establishing that a connection from a client to a server is fully operational. The default is 30 seconds, which should be adequate in the majority of cases.

The value set by this function comes into effect if, for example, the server crashes after the transport (for example, TCP/IP) connection has been made but before the full Orbix connection has been established.

The value set by `connectionTimeout()` is independently used by `abortSlowConnects()` when setting up the transport connection.

If clients of a single-threaded server continually time out because the server is busy, it may be that existing connections are being favoured over new connection attempts. The function `CORBA::ORB::eagerListeners()` addresses this problem.

Return Value Returns the previous setting.

Notes Orbix specific.

See Also `CORBA::ORB::abortSlowConnects()`
`CORBA::ORB::maxConnectRetries()`
`CORBA::Environment::timeout()`
`CORBA::ORB::eagerListeners()`

CORBA::ORB::create_environment()

Synopsis

```
Status create_environment(
   Environment_ptr& new_env,
   Environment& env = default_environment);
```

Description Returns a newly-created `Environment` in the parameter `new_env`.

Return Value Returns true (`1`) if successful, false (`0`) otherwise.

Notes CORBA compliant.

See Also `CORBA::Environment`

CORBA::ORB::create_list()

Synopsis

```
Status create_list(Long count,
   NVList_ptr& new_list,
   Environment& env = default_environment);
```

Description Allocates space for an empty `NVList`, `new_list`, of size `count` to contain `NamedValue` objects. You can use a `NamedValue` struct as a parameter type or as a way to describe arguments to a request when using the Dynamic Invocation Interface.

Parameters

`count`	Number of elements in the new `NVList`.
`new_list`	A pointer to the start of the list. The caller must release the reference when it is no longer needed, or assign it to a `NVList_var` variable for automatic management.

Return Value Returns true (`1`) if successful, false (`0`) otherwise.

Notes CORBA compliant. This function is part of the Dynamic Invocation Interface.

See Also

`CORBA::NVList`
`CORBA::ORB::create_operation_list()`
`CORBA::NamedValue`
`CORBA::Request`

CORBA::ORB::create_named_value)

Synopsis

```
Status create_named_value(NamedValue_ptr& rNamedValue );
```

Description Required for creating `NamedValue` objects to be used as return value parameter for the `Object::_create_request` operation when using the Dynamic Invocation Interface.

Parameters

rNamedValue	A pointer to the NamedValue. The caller must release the reference when it is no longer needed, or assign it to a NamedValue_var variable for automatic management.

Return Value Returns true (1) if successful, false (0) otherwise.

Notes CORBA compliant. This function is part of the Dynamic Invocation Interface.

See Also
CORBA::NVList
CORBA::Request
CORBA::NamedValue

CORBA::ORB::create_operation_list()

Synopsis

```
Status create_operation_list(
   OperationDef_ptr operation,
   NVList_ptr list);
```

Description Returns an NVList, in the parameter list, initialised with the argument descriptions for the operation specified in operation. The returned NVList is of the correct length (with one element per argument), and each NamedValue element of the list has a valid name and valid flags (denoting the argument passing mode). The value (of type CORBA::Any) of the NamedValue has a valid type (denoting the type of the argument). The value of the argument is not filled in.

Parameters

operation	A reference to the Interface Repository object describing the operation.
list	A pointer to the start of the list. The caller must release the reference when it is no longer needed, or assign it to a NVList_var variable for automatic management.

Return Value Returns true (1) if successful, false (0) otherwise.

Notes CORBA compliant. Use of this function requires a program to be linked with the IRclt library and for the relevant IDL file to be compiled with the -R switch.

See Also
CORBA::NVList
CORBA::Any

```
CORBA::create_list()
CORBA::NamedValue
```

CORBA::ORB::DeactivateCVHandler()

Synopsis

```
static void DeactivateCVHandler(const char* identifier);
```

Description

Deactivates the configuration value handler identified in `identifier`.

The function `ReinitialiseConfig()` must be called before modifications by this function take effect.

Notes

Orbix specific.

See Also

```
CORBA::ORB::ActivateCVHandler()
CORBA::ORB::ReinitialiseConfig()
CORBA::UserCVHandler
CORBA::ExtraRegistryCVHandler
CORBA::ExtraConfigFileHandler
```

CORBA::ORB::DeactivateOutputHandler()

Synopsis

```
static void DeactivateOutputHandler(
   const char* identifier);
```

Description

Deactivates the output handler specified in `identifier`.

Notes

Orbix specific.

See Also

```
CORBA::UserOutput
```

CORBA::ORB::DEFAULT_TIMEOUT

Synopsis

```
static const ULong DEFAULT_TIMEOUT;
```

Description

Defines the default number of milliseconds that a server should wait between events: a timeout occurs if Orbix has to wait longer than the timeout value for the next event. The default timeout is 60,000 milliseconds (1 minute).

Notes

Orbix specific.

See Also

```
CORBA::ORB::INFINITE_TIMEOUT
```

```
CORBA::ORB::defaultTxTimeout()
CORBA::BOA::impl_is_ready()
CORBA::BOA::processNextEvent()
CORBA::BOA::processEvents()
```

CORBA::ORB::defaultTxTimeout()

Synopsis

```
ULong defaultTxTimeout(
   ULong val = INFINITE_TIMEOUT,
   Environment& env = default_environment);
```

Description Sets the timeout for all remote calls and returns the previous setting. If a timeout is set in an `Environment`, it supersedes any value set globally by this function. By default, no call has a timeout, that is, the default timeout is infinite.

The value set by this function is ignored when making a connection between a client and a server. It comes into effect only when this connection has been established.

Return Value Returns the previous setting.

Exceptions A subsequent remote call that does not return within the given timeout interval fails with a `CORBA::COMM_FAILURE` exception.

Notes Orbix specific.

See Also `CORBA::Environment::timeout()`

CORBA::ORB::eagerListeners()

Synopsis

```
Boolean eagerListeners(
   Boolean value,
   Environment& env = default_environment);
```

Description By default, currently established connections to a server are given priority over requests for new connections. As a result, busy single-threaded servers (for example, processing long running operations) may not service new connection attempts and consequently clients attempting to make a connection may continually time out.

The function eagerListeners() allows equal fairness to be given to both established connections and to new connection attempts and so avoids discrimination against new connections resulting from the default behaviour.

This feature is not necessary in multi-threaded versions of Orbix.

Parameters

value	A value of 1 (true) enables eager listening—this means that attempts to establish new connections are given equal priority to processing of established connections; a value of 0 (false) re-establishes the default behaviour.

Return Value Returns the previous value.

Notes Orbix specific.

See Also
```
Boolean eagerListeners(
   Environment& env = default_environment)
CORBA::ORB::connectionTimeout()
```

CORBA::ORB::eagerListeners()

Synopsis
```
Boolean eagerListeners(
   Environment& env = default_environment);
```

Description Determines if eager listening is set. Refer to the overloaded modifier function for details.

Notes Orbix specific.

See Also
```
Boolean eagerListeners(
   Boolean value,
   Environment& env = default_environment)
```

CORBA::ORB::getAllOrbixFDs()

Synopsis
```
fd_set getAllOrbixFDs() const;
```

Description Returns the current set of all Orbix file descriptors. In Orbix-MT, this may include file descriptors that are not returned by CORBA::ORB::getSelectableFDSet().

Return Value Returns the complete file descriptor set.

Notes Orbix specific.

See Also `CORBA::getSelectableFDSet()`

CORBA::ORB::get_default_context()

Synopsis

```
Status get_default_context(
   Context_ptr& context,
   Environment& env = default_environment);
```

Description Returns a `CORBA::Context` object, in the parameter `context`, representing the process' default context. Refer to `CORBA::Context` for an explanation of the default context.

Return Value Returns `1` (true) if successful, `0` (false) otherwise.

Notes CORBA compliant.

See Also `CORBA::NVList`

CORBA::ORB::getForeignFDSet()

Synopsis

```
fd_set getForeignFDSet() const;
```

Description Returns the set of all foreign file descriptors added to the Orbix event processing loop using `CORBA::ORB::addForeignFD()` or `addForeignFDSet()`.

Return Value Returns the current set of foreign file descriptors.

Notes Orbix specific.

See Also `CORBA::ORB::addForeignFD()`
`CORBA::ORB::addForeignFDSet()`

CORBA::ORB::get_next_response()

Synopsis

```
Status get_next_response(
   Request_ptr& req,
   Environment& env = default_environment);
```

Description May be called successively to determine the outcomes of the individual requests specified in a `CORBA::send_multiple_requests()` call. The order in which responses are returned is not necessarily related to the order in which the requests are completed.

Parameters

`req` An input/output parameter which is changed to point to the `Request` whose completion is being reported.

Return Value Returns `1` (true) if successful, returns `0` (false) otherwise.

Notes CORBA compliant.

See Also

`CORBA::ORB::send_multiple_requests()`
`CORBA::Request::get_response()`
`CORBA::Request::send_deferred()`

CORBA::ORB::getSelectableFDSet()

Synopsis

```
fd_set getSelectableFDSet() const;
```

Description Returns the set of Orbix file descriptors that are guaranteed to be active when Orbix has events to process. In Orbix-MT, this may be a subset of the complete Orbix file descriptor set.

An application must call `getSelectableFDSet()` during its initialization, in order to instruct Orbix to initialize for the file descriptor set.

Return Value Returns the active file descriptor set.

Notes Orbix specific.

See Also `CORBA::ORB::getAllOrbixFDs()`

CORBA::ORB::GetConfigValue()

Synopsis

```
static unsigned int GetConfigValue(
   const char* name, char*& value);
```

Description Obtains the value of the configuration entry named in `name`.

Parameters

`name`	The name of the desired configuration entry, for example, `IT_DAEMON_PORT`.
`value`	The value of the configuration entry.

Return Value Returns 1 (true) if a value for the configuration entry specified in name is available, returns 0 (false) otherwise.

Notes Orbix specific.

See Also

`CORBA::ORB::SetConfigValue()`
`CORBA::ORB::ReinitialiseConfig()`
`CORBA::UserCVHandler`
`CORBA::ExtraRegistryCVHandler`
`CORBA::ExtraConfigFileHandler`

CORBA::ORB::INFINITE_TIMEOUT

Synopsis

```
static const ULong INFINITE_TIMEOUT;
```

Description Used as a parameter to `CORBA::BOA::impl_is_ready()`, `CORBA::BOA::processEvents()`, `CORBA::BOA::processNextEvent()` and `CORBA::BOA::obj_is_ready()` to indicate that a server should not time out waiting for events.

Notes Orbix specific.

See Also

`CORBA::ORB::DEFAULT_TIMEOUT`
`CORBA::BOA::impl_is_ready()`
`CORBA::BOA::obj_is_ready()`
`CORBA::BOA::processEvents()`
`CORBA::BOA::processNextEvent()`

CORBA::ORB::isBaseInterfaceOf()

Synopsis

```
Boolean isBaseInterfaceOf(const char* derived,
   const char* maybeABase,
   Environment& env = default_environment);
```

Description Determines whether the interface named in `maybeABase` is a base interface of the interface named in `derived`.

Return Value Returns true if `maybeABase` is a base interface of `derived` (or `maybeABase` and `derived` are the same interface) and returns false otherwise.

Notes Orbix specific.

See Also `CORBA::ORB::baseInterfacesof()`

CORBA::ORB::isForeignFD()

Synopsis

```
CORBA::Boolean isForeignFD(int fd,
   unsigned char mask=FD_FOREIGN_WRITE
   | FD_FOREIGN_READ | FD_FOREIGN_EXCEPT);
```

Description Tests if a specified file descriptor has been registered as a foreign file descriptor with the Orbix event processing loop.

Parameters

`fd`	The file descriptor to be tested for membership of the registered file descriptor set.
`mask`	This parameter allows you to test for which type of events the file descriptor is monitored. The value can be `FD_FOREIGN_WRITE`, `FD_FOREIGN_READ`, `FD_FOREIGN_EXCEPT`, or a combination of these.

Return Value Returns a non-zero value (true) if the specified file descriptor is part of the foreign file descriptor set *and* is monitored for the specified events. Returns zero (false) otherwise.

Notes Orbix specific.

CORBA::ORB::isOrbixFD()

Synopsis `CORBA::Boolean isOrbixFD(int fd);`

Description Tests if a specified file descriptor is included in the current set of Orbix file descriptors.

Parameters

`fd` The file descriptor to be tested for membership of the Orbix file descriptor set.

Return Value Returns a non-zero value (true) if the specified file descriptor is part of the Orbix file descriptor set. Returns zero (false) otherwise.

Notes Orbix specific.

CORBA::ORB::isOrbixSelectableFD()

Synopsis `CORBA::Boolean isOrbixSelectableFD(int fd);`

Description Tests if a specified file descriptor is part of the file descriptor set returned by `CORBA::ORB::getSelectableFDSet()`.

Parameters

`fd` The file descriptor to be tested for membership of the selectable file descriptor set.

Return Value Returns a non-zero value (true) if the specified file descriptor is part of the Orbix selectable file descriptor set. Returns zero (false) otherwise.

Notes Orbix specific.

CORBA::ORB::list_initial_services()

Synopsis

```
ObjectIdList_ptr list_initial_services(
   CORBA::Environment& env = IT_chooseDefaultEnv());
```

Description Some services, in particular, CORBAservices such as the Naming Service, can only be used by first obtaining an object reference to an object through which the service can be used. (CORBAservices are optional extensions to ORB implementations that are specified by CORBA. They include the Naming Service and Event Service.)

The function `list_initial_services()` finds a list of the services provided by Orbix. Currently only the names "NameService" and "InterfaceRepository" are listed by this function.

Return Value Returns a sequence of strings, each of which names a service provided by Orbix.

Notes CORBA compliant.

See Also `CORBA::ORB::resolve_initial_references()`

CORBA::ORB::makeIOR()

Synopsis

```
string makeIOR(char * host, unsigned short port,
               ObjectKey objKey, char * typeID,
               Environment &env=IT_chooseDefaultEnv ());
```

Description Creates a string IOR with all the relevant information.

Parameters The parameters `host`, `port` and `typeID` are the respective standard elements of the IOR. The `objKey` parameter is the opaque object key part of the IOR required by the CORBA specification.

The IOR object key is created from the server, interface and 'orbixhost' fields of the Orbix object reference, using `CORBA::ORB::makeOrbixObjectKey()`. If the `host` parameter to `makeIOR()` is null, the 'orbixhost' is also used as the host field of the IOR.

Return Value Returns an IOR in string form.

See Also `CORBA::ORB::makeOrbixObjectKey()`

CORBA::ORB::makeOrbixObjectKey()

Synopsis

```
_IDL_SEQUENCE_octet * makeOrbixObjectKey(
            const char * host, const char * serverName,
            const char * interfaceName,
            Environment& env = default_environment);
```

Description Creates an Orbix object key. You can use this to make an IOR.

Parameters The object key is created from the server, interface and host fields of the Orbix object reference.

Return Value A simple sequence of octets.

See Also `CORBA::ORB::makeIOR()`

CORBA::ORB::maxConnectionThreads()

Synopsis

```
unsigned long maxConnectionThreads();
```

Description As described in the *Orbix C++ Programmer's Guide*, Orbix-MT creates internal connection threads to process incoming requests to servers. This function returns the maximum number of internal connection threads created by Orbix-MT in the current process.

Return Value Returns the current maximum number of connection threads.

Notes Orbix specific.

See Also `CORBA::maxFDsPerConnectionThread()`

CORBA::ORB::maxConnectionThreads()

Synopsis

```
void maxConnectionThreads(unsigned long max);
```

Description As described in the *Orbix C++ Programmer's Guide*, Orbix-MT creates internal connection threads to process incoming requests to servers. This function sets the maximum number of internal connection threads created by Orbix-MT in the current process.

Parameters

`max`	The maximum number of connection threads to be created.

Notes Orbix specific.

See Also

```
CORBA::ORB::maxFDsPerConnectionThread()
CORBA::ORB::removeForeignFD()
CORBA::ORB::removeForeignFDSet()
```

CORBA::ORB::maxConnectRetries()

Synopsis

```
ULong maxConnectRetries(ULong retries,
   Environment& env = default_environment);
```

Description If an operation call cannot be made on the first attempt because the transport (for example, TCP/IP) connection cannot be established, Orbix retries the attempt every two seconds until either the call can be made or until there have been too many retries. The function `maxConnectRetries()` sets the maximum number of retries. The default number of retries is ten.

As an alternative, the `IT_CONNECT_ATTEMPTS` entry in the Orbix configuration file or as an environment variable may be used to control the maximum number of retries. The value set by `maxConnectRetries()` takes precedence over this. The `IT_CONNECT_ATTEMPTS` value is used only if `maxConnectRetries()` is set to zero.

Return Value Returns the previous setting.

Exceptions A subsequent operation call on an object in the server will raise the system exception `CORBA::COMM_FAILURE` to the client application if the server cannot be contacted within the maximum number of retries.

Notes Orbix specific.

See Also `CORBA::ORB::connectionTimeout()`

CORBA::ORB::maxFDsPerConnectionThread()

Synopsis
```
unsigned long maxFDsPerConnectionThread();
```

Description As described in the *Orbix C++ Programmer's Guide*, Orbix-MT creates internal connection threads to process incoming requests to servers. This function returns the current maximum number of connections per connection thread.

Return Value Returns the current maximum value.

Notes Orbix specific.

See Also `CORBA::ORB::maxConnectionThreads()`

CORBA::ORB::maxFDsPerConnectionThread()

Synopsis
```
void maxFDsPerConnectionThread(unsigned long max);
```

Description As described in the *Orbix C++ Programmer's Guide*, Orbix-MT creates internal connection threads to process incoming requests to servers. This function allows you to specify the maximum number of connections to be serviced by each connection thread. When a connection thread reaches the maximum value, Orbix-MT creates a new connection thread.

Parameters

`max`	The maximum number of connections to be serviced by each internal connection thread.

Notes Orbix specific.

See Also `CORBA::ORB::maxConnectionThreads()`

CORBA::ORB::myHost()

Synopsis
```
const char* myHost(
   Environment& env = default_environment) const;
```

Description Returns the name of the host on which the `CORBA::Orbix` object is located.

Notes Orbix specific.

See Also `CORBA::ORB::myServer()`

CORBA::ORB::myServer()

Synopsis
```
const char* myServer(
   Environment& env = default_environment) const;
```

Description Returns the server name for which the `CORBA::Orbix` object was created. If called from a client it returns the process identifier in string form.

Notes Orbix specific.

See Also `CORBA::ORB::myHost()`
`CORBA::ORB::setServerName()`

CORBA::ORB::nativeExceptions()

Synopsis
```
Boolean nativeExceptions(Environment& env =
   default_environment) const;
```

Description Returns `1` (true) if Orbix throws a C++ exception to the caller of a remote operation and returns `0` (false) otherwise.

Notes Orbix specific.

See Also
```
CORBA::ORB::nativeExceptions(Boolean turnOn,
   Environment&)
```

CORBA::ORB::nativeExceptions()

Synopsis
```
Boolean nativeExceptions(Boolean turnOn,
   Environment& env = default_environment);
```

Description Requests Orbix not to throw a C++ exception to the caller of a remote operation if `turnOn` is `0` (false). By default Orbix throws C++ exceptions when the host compiler supports exception handling.

Notes Orbix specific.

See Also `CORBA::ORB::nativeExceptions(Environment&) const`

CORBA::ORB::noReconnectOnFailure()

Synopsis

```
Boolean noReconnectOnFailure(Boolean value,
            Environment &env=IT_chooseDefaultEnv ());
```

Description

When an Orbix client first contacts a server, a single communications channel is established between the client-server pair. This connection is then used for all subsequent communications between the client and the server. The connection is closed only when either the client or the server exits.

With single-threaded Orbix, when a server exits while a client is still connected, the next invocation by the client raises a system exception of type `CORBA::COMM_FAILURE`. If the client attempts another invocation, Orbix automatically tries to re-establish the connection.

Note: Multi-threaded Orbix (OrbixMT) automatically tries to re-establish without throwing a system exception.

You can change this default behaviour by passing the value `1` (true) to the function `CORBA::ORB::noReconnectOnFailure()`. Then, all client attempts to contact a server subsequent to closure of the communications channel raise a `CORBA::COMM_FAILURE` system exception.

Parameters

`value` A value of `1` (true) means that all client attempts to contact a server subsequent to closure of the communications channel raise a `CORBA::COMM_FAILURE` system exception.

A value of `0` (false) means that Orbix attempts to re-establish a failed connection to a server on the next invocation by a client. This is the default behaviour.

Return Value Returns the previous value.

Notes Orbix specific.

See Also `CORBA::ORB::maxConnectRetries()`

CORBA::ORB::object_to_string()

Synopsis

```
char* object_to_string(Object_ptr obj,
   Environment& env = default_environment);
```

Description

Converts an object reference to a string.

A stringified Orbix object reference is of the form:

```
:\host:serverName:marker:IFR_host:IFR_Server
:interfaceMarker
```

These fields are as follows:

`host`	The host name of the target object.
`serverName`	The name of the target object's server as registered in the Implementation Repository and also as specified to `CORBA::BOA::impl_is_ready()`, `CORBA::BOA::object_is_ready()` or set by `setServerName()`. For a local object in a server, this is that server's name (if that server's name is known), otherwise it is the process' identifier. The server name is known if the server is launched by Orbix; or if it is launched manually and the server name is passed to `impl_is_ready()` or if the server name has been set by `CORBA::ORB::setServerName()`.
`marker`	The object's marker name. This can be chosen by the application, or it is a string of digits chosen by Orbix.
`IFR_host`	The name of a host running an Interface Repository that stores the target object's IDL definition. Normally, this is blank.
`IFR_server`	The string "IFR".
`interface-Marker`	The target object's interface. If called on a proxy, this may not be the object's true (most derived) interface—it may be a base interface.

Return Value

Returns an Orbix stringified object reference. The caller is responsible for deleting the string returned.

Notes

CORBA compliant.

See Also

`CORBA::ORB::string_to_object()`
`CORBA::Object::_object_to_string()`

CORBA::ORB::optimiseProtocolEncoding()

Synopsis

```
Boolean optimiseProtocolEncoding(
   Boolean value,
   Environment& env = default_environment);
```

Description Enables protocol encoding optimisations if `value` is set to `true`, which is the default. Protocol encoding optimisations are disabled if `value` set to `false`. Protocol encoding optimisations are implemented within Orbix by the use of null encoding (that is, no encoding at all) when appropriate, to transmit data.

Return Value Returns the previous setting.

Notes Orbix specific. You are unlikely to need to use this function.

CORBA::ORB::Output()

Synopsis

```
static void Output(char* message, int level = 1);
static void Output(Environment& env, int level = 1);
static void Output(SystemException* sysEx, int level = 1);
```

Description A set of functions to output application's diagnostic and other output via the active output handlers. Unless overridden by an implementation of class `CORBA::ORB::UserOutput`, all output is directed to the C++ `cout` stream via the default output handler, `IT_StdOutHandler`.

Parameters

`message`	Outputs a string.
`env`	Outputs details of an Environment.
`sysEx`	Outputs details of a system exception.
`level`	The diagnostic level. (All Orbix output is assigned level 1.)

Notes Orbix specific.

See Also `CORBA::UserOutput`
`CORBA::ORB::setDiagnostics`

CORBA::ORB::pingDuringBind()

Synopsis

```
Boolean pingDuringBind(Boolean pingOn,
   Environment& env = default_environment);
```

Description By default, `_bind()` raises an exception if the object on which the `_bind()` is attempted is unknown to Orbix. Doing so requires Orbix to ping the desired object (the ping operation is defined by Orbix and it has no effect on the target object). The pinging causes the target server process to be activated if necessary, and confirms that this server recognises the target object. You can disable pinging using `pingDuringBind()`, by passing `false` to the parameter `pingOn`.

You may wish to disable pinging to improve efficiency by reducing the overall number of remote invocations.

When `pingDuringBind(false)` is called:

- A `_bind()` to an unavailable object does not immediately raise an exception, but subsequent requests using the object reference returned from `_bind()` will fail by raising a system exception (`CORBA::INV_OBJREF`).
- If a host name is specified to `_bind()`, the `_bind()` does not itself make any remote calls; it simply sets up a proxy with the required fields.
- If a host name is not specified, Orbix uses its locator to find a suitable server, but `_bind()` does not interact with that server to determine if the required object exists within it.

Return Value Returns the previous setting.

Notes Orbix specific.

CORBA::ORB::PlaceCVHandlerAfter()

Synopsis

```
static void PlaceCVHandlerAfter(
   const char* handler, const char* afterThisHandler);
```

Description Modifies the order in which configuration handlers are called. If not explicitly rearranged, configuration value handlers are called in reverse order of the order in which they are instantiated in an application.

You must call the function `ReinitialiseConfig()` before modifications by this function take effect.

Parameters

`handler`	The handler to be rearranged.
`afterThisHandler`	The configuration value handler after which the handler specified in the parameter `handler` should be placed.

Notes Orbix specific.

See Also
`CORBA::ORB::PlaceCVHandlerBefore()`
`CORBA::ORB::ReinitialiseConfig()`
`CORBA::UserCVHandler`
`CORBA::ExtraRegistryCVHandler`
`CORBA::ExtraConfigFileHandler`

CORBA::ORB::PlaceCVHandlerBefore()

Synopsis

```
static void PlaceCVHandlerBefore(
   const char* handler, const char* beforeThisHandler);
```

Description Modifies the order in which configuration handlers are called. If not explicitly rearranged, configuration value handlers are called in reverse order of the order in which they are instantiated in an application.

The function `ReinitialiseConfig()` must be called before modifications by this function take effect.

Parameters

`handler`	The handler to be rearranged.
`beforeThisHandler`	The configuration value handler before which the handler specified in the parameter `handler` should be placed.

Notes Orbix specific.

See Also `CORBA::ORB::PlaceCVHandlerAfter()`
`CORBA::ORB::ReinitialiseConfig()`
`CORBA::UserCVHandler`
`CORBA::ExtraRegistryCVHandler`
`CORBA::ExtraConfigFileHandler`

CORBA::ORB::poll_next_response()

Synopsis

```
Boolean poll_next_response(
   Environment& env = default_environment);
```

Description May be called successively to determine whether the individual requests specified in a `CORBA::ORB::send_multiple_requests_oneway()` or `CORBA::ORB::send_multiple_requests_deferred()` call have completed successfully. The function returns immediately.

Alternatively you may call the function `CORBA::Request::poll_response()` on the individual `Request` objects in the sequence of `Requests` passed to `send_multiple_requests_oneway()` and `send_multiptle_requests_deferred()`.

Notes CORBA compliant.

See Also `CORBA::ORB::get_next_response()`
`CORBA::ORB::send_multiple_requests_oneway()`
`CORBA::Request::poll_response()`

CORBA::ORB::registerIOCallback()

Synopsis

```
OrbixIOCallback registerIOCallback(
   OrbixIOCallback IOCallback,
   OrbixIOCallbackType IOCallbackType);
```

Description An application may wish to be informed when a new connection is established, or when an existing connection is closed. A connection is opened when a client first communicates with the server; and it is closed when the client terminates or the communication's level reports a break in service between the server and client. A client or server application may specify functions to be called at either

of these two events by calling the function registerIOCallback() on the CORBA::Orbix object. You can disable callbacks by passing 0 as the first parameter.

Parameters

IOCallback	The type of this parameter is specified by the type definition:
	`// C++`
	`typedef void`
	`(*OrbixIOCallback) (int);`
	IOCallback is a pointer to a function that takes an int parameter and returns void. This function will be called when either an open connection or a close connection event occurs, depending on the value of the second parameter, IOCallbackType. The parameter passed to the automatically-called function indicates the file descriptor assigned to the connection that is either being opened or closed. While handling an operation invocation, a server can use the function CORBA::Request::descriptor() to find the file descriptor assigned to the then current connection:
	`// C++`
	`env.m_request->descriptor();`
	assuming that env is the formal CORBA::Environment parameter of the current operation. The int value returned from this call is subsequently passed to the function automatically called by registerIOCallback() when the connection to that client closes.

IOCallbackType	The type of event for which the application would like to receive callbacks. The parameter IOCallbackType takes one of the values, FD_OPEN_CALLBACK or FD_CLOSE_CALLBACK, defined in the enumerated type IOCallbackType.

Return Value Returns the address of the previous function that was to be called when a connection was opened or closed.

Notes Orbix specific.

See Also
```
CORBA::Request::descriptor()
CORBA::BOA::getFileDescriptors()
```

CORBA::ORB::registerIOCallbackObject()

Synopsis
```
CORBA::Boolean registerIOCallbackObject(
   unsigned char eventType, IT_IOCallback *obj);
```

Description As described in the reference for class `CORBA::IT_IOCallback`, Orbix allows you to receive callbacks when Orbix connections are opened or closed and when events occur on foreign file descriptors added to the Orbix event loop. To receive these callbacks, you must implement a class that inherits from `CORBA::IT_IOCallback` and register an object of this type with Orbix. The function `CORBA::ORB::registerIOCallback()` allows you to register a callback object with Orbix.

Parameters

`eventType`	Orbix can monitor both native Orbix file descriptors and foreign file descriptors for events, as described in `CORBA::ORB::addForeignFd()`. This parameter indicates which file descriptors should be monitored with respect to the callback object being registered. The value of this parameter is `CORBA::OrbixIO`, `CORBA::ForeignIO`, or a logical combination of these.
`obj`	The callback object to be registered with Orbix.

Return Value Returns a non-zero (true) value if the object is successfully registered. Returns zero (false) otherwise.

Notes Orbix specific.

See Also
```
CORBA::ORB::addForeignFD()
CORBA::ORB::unregisterIOCallback()
CORBA::IT_IOCallback
```

CORBA::ORB::removeForeignFD()

Synopsis

```
void removeForeignFD(
   const int fd, unsigned char aState);
```

Description If you have added foreign file descriptors to the Orbix event loop using `CORBA::ORB::addForeignFD()` or `CORBA::ORB::addForeignFDSet()`, this function allows you to remove a single foreign file descriptor.

Parameters

`fd`	The file descriptor to be removed from the Orbix event processing loop.
`aState`	Indicates the type of events for which the file descriptor should no longer be monitored by Orbix. This can be `FD_READ`, `FD_WRITE`, `FD_EXCEPT`, or a logical combination of these values.

Notes Orbix specific.

See Also

`CORBA::ORB::addForeignFD()`
`CORBA::ORB::addForeignFDSet()`
`CORBA::ORB::removeForeignFDSet()`

CORBA::ORB::removeForeignFDSet()

Synopsis

```
void removeForeignFDSet(
   fd_set& fds, unsigned char aState);
```

Description If you have added foreign file descriptors to the Orbix event loop using `CORBA::ORB::addForeignFD()` or `CORBA::ORB::addForeignFDSet()`, this function allows you to remove a set of foreign file descriptors.

Parameters

`fds`	The file descriptor set to be removed from the Orbix event processing loop.
`aState`	Indicates the type of events for which the file descriptors should no longer be monitored by Orbix. This can be `FD_READ`, `FD_WRITE`, `FD_EXCEPT`, or a logical combination of these values.

Notes Orbix specific.

See Also
```
CORBA::ORB::addForeignFD()
CORBA::ORB::addForeignFDSet()
CORBA::ORB::removeForeignFD()
```

CORBA::ORB::ReinitialiseConfig()

Synopsis
```
static void ReinitialiseConfig();
```

Description This function must be called to make effective any modifications to the arrangement or activation of configuration value handlers. In particular, it must be called in order that changes made by `ActivateCVHandler()`, `DeactivateCVHandler()`, `PlaceCVHandlerBefore()`, `PlaceCVHandlerAfter()` take effect.

Notes Orbix specific.

See Also
```
CORBA::ORB::PlaceCVHandlerBefore()
CORBA::ORB::PlaceCVHandlerAfter()
CORBA::ORB::ActivateCVHandler()
CORBA::ORB::DeactivateCVHandler()
CORBA::ORB::SetConfigValue()
CORBA::UserCVHandler
CORBA::ExtraRegistryCVHandler
CORBA::ExtraConfigFileHandler
```

CORBA::ORB::reSizeObjectTable()

Synopsis
```
void reSizeObjectTable(ULong newSize,
   Environment& env = default_environment);
```

Description Resizes the object table. All of the Orbix objects in an address space are registered in its object table—a hash table that maps from object identifiers to the location of objects in virtual memory. It may be important that this table is not too small for the number of objects in the process, since long overflow chains lead to inefficiencies. The default size of the object table is defined as the value:

```
CORBA::_OBJECT_TABLE_SIZE_DEFAULT
```

in the file `CORBA.h`.

If you anticipate that a program will handle a much larger number of objects than the default size (which is of the order of 1000), you can use this function to resize the table.

Parameters

`newSize`	The value given to `newSize` should be in the same order as the number of objects expected to be managed in the process.

Notes Orbix specific.

See Also `CORBA::_OBJECT_TABLE_SIZE_DEFAULT`

CORBA::ORB::resolve_initial_references()

Synopsis

```
Object_ptr resolve_initial_references(
      ObjectId identifier,
      CORBA::Environment&env=IT_chooseDefaultEnv());
```

Description Returns an object reference through which a service (for example, Interface Repository or a CORBAservice such as the Naming Service) can be used.

Parameters

`identifier`	The name of the desired service. A list of services supported by Orbix can be obtained using `CORBA::ORB::list_initial_services()`.

Return Value Returns an object reference for the desired service. The object reference returned must be narrowed to the correct object type. For example, the object reference returned from resolving the name "InterfaceRepository" must be narrowed to the type `CORBA::Repository`.

Notes CORBA compliant.

See Also `CORBA::ORB::list_initial_services()`

CORBA::ORB::resortToStatic()

Synopsis

```
Boolean resortToStatic(Boolean value,
   Environment& env = default_environment);
```

Description

When a reference to a remote object enters a client's or server's address space, Orbix constructs a proxy for that object. This proxy (a normal C++ object) is constructed to execute the proxy code corresponding to the actual interface of the true object it represents. Hence if a server object has an operation of the form:

```
// IDL
// In some interface.
void op(in Account a);
```

and if a reference to a (remote) `CurrentAccount` (a derived interface of `Account`) is passed as a parameter to this operation, Orbix tries to set up a proxy for a `CurrentAccount` in the server's address space.

If the server was not linked with the IDL compiler generated proxy code for `CurrentAccount`, Orbix creates a proxy for an `Account` in the server's address space. That is, Orbix uses the static rather than the dynamic type of the parameter. The same applies when an object reference enters a client.

If resorting to the static type is not acceptable, you should call `resortToStatic()` on the `CORBA::Orbix` object, passing `false` for the first parameter. The default setting is `true`. Setting the value to `false` means that Orbix raises an exception if the server or client is not linked with the actual (dynamic) proxy code.

Return Value

Returns the previous setting.

Notes

Orbix specific.

CORBA::ORB:: send_multiple_requests_deferred()

Synopsis

```
Status send_multiple_requests_deferred(
   const RequestSeq& requests,
   Environment& env = default_environment);
```

Description Initiates a number of requests in parallel. It does not wait for the requests to finish before returning to the caller. The caller can use `CORBA::get_next_response()` or `CORBA::Request::get_response()` to determine the outcome of the requests. Memory leakage results if one of these functions is not called for a request issued with `CORBA::Request::send()` or `CORBA::ORB::send_multiple_requests()`.

Parameters

`requests`	A sequence of requests.

Return Value Returns `1` (true) if successful, returns `0` (false) otherwise.

Notes CORBA compliant.

See Also

```
CORBA::ORB::send_multiple_requests_oneway()
CORBA::Request::get_response()
CORBA::Request::send_deferred()
CORBA::ORB::send_multiple_requests_oneway()
CORBA::ORB::poll_next_response()
```

CORBA::ORB:: send_multiple_requests_oneway()

Synopsis

```
Status send_multiple_requests_oneway(
   const RequestSeq& requests,
   Environment& env = default_environment);
```

Description Initiates a number of requests in parallel. It does not wait for the requests to finish before returning to the caller.

Parameters

`requests`	A sequence of requests. The operations in this sequence do not have to be IDL oneway operations. The caller does not expect a response, nor does it expect `out` or `inout` parameters to be updated.

Return Value Returns true (`1`) if successful, false (`0`) otherwise.

Notes CORBA compliant.

See Also `CORBA::Request::send_oneway()`
`CORBA::ORB::send_multiple_requests_deferred()`

CORBA::ORB::set_unsafeDelete()

Synopsis

```
IT_PFV set_unsafeDelete(IT_PFV pfv);
```

Description If you call the C++ `delete` operator (implicitly or explicitly) on an Orbix object with a reference count not equal to one, Orbix issues an error message and immediately exits. You can specify an alternative action using `set_unsafeDelete()`. The function specified in the parameter `pfv` is called if `delete` is called on an Orbix object with a reference count not equal to one.

Parameters

`pfv`	A pointer to a function that takes no parameters and has a void return type.

Return Value Returns the address of the previous function that was to be called on a delete error.

Notes Orbix specific.

CORBA::ORB::SetConfigValue()

Synopsis

```
static unsigned int SetConfigValue(
   const char* name, char* value);
```

Description

Sets the value of the configuration entry named in `name` for this process. (It does not set the configuration entry in the Orbix configuration file or system registry.)

The configuration entries that can be set by `SetConfigValue()` are:

- `IT_DAEMON_SERVER_BASE`
- `IT_DAEMON_SERVER_RANGE`
- `IT_DAEMON_PORT`
- `IT_ERRORS`
- `IT_IMP_REP_PATH`
- `IT_LOCATOR_PATH`
- `IT_INT_REP_PATH`
- `IT_LOCAL_DOMAIN`

The function `ReinitialiseConfig()` invalidates the effect of a call to this function.

Parameters

`name`	The name of the configuration entry, for example, `IT_INT_REP_PATH`.
`value`	The value to be assigned to the configuration entry.

Return Value

Returns `1` (true) if successful; returns `0` (false) otherwise.

Notes

Orbix specific.

See Also

`CORBA::ORB::GetConfigValue()`
`CORBA::ORB::ReinitialiseConfig()`
`CORBA::UserCVHandler`
`CORBA::ExtraRegistryCVHandler`
`CORBA::ExtraConfigFileHandler`

CORBA::ORB::setDiagnostics()

Synopsis

```
Short setDiagnostics(Short level,
   Environment& env = default_environment);
```

Description Controls the level of diagnostic messages output to the `cout` stream by the Orbix libraries. The previous setting is returned.

Level	Output
0	No diagnostics
1	Simple diagnostics (this is the default)
2	Full diagnostics

You can obtain an interleaved history of activity across the distributed system from the full diagnostic output, say, from a client to a server, by redirecting the diagnostic messages from both the client and the server to files and then sorting a merged copy of these files.

Return Value Returns the previous setting.

Notes Orbix specific.

CORBA::ORB::setServerName()

Synopsis

```
void setServerName(const char* serverName,
   Environment& env = default_environment);
```

Description Sets the server name for the current server process. This function may be used to overcome the problem of exporting object references from a persistent server before calling `impl_is_ready()`.

Note: If you are using callbacks, you should not invoke `setServerName()` from a client. If a client invokes `setServerName()`, server operations on its callback object fails.

Notes Orbix specific.

See Also

```
CORBA::ORB::myServer()
CORBA::ORB::impl_is_ready()
CORBA::BOA::change_implementation()
```

CORBA::ORB::string_to_object()

Synopsis

```
Object_ptr string_to_object(const char* obj_ref_string,
   Environment& env = default_environment);
```

Description Converts the stringified object reference `obj_ref_string` to an object reference. A stringified object reference is of the form:

```
:\host:serverName:marker:IFR_host:IFR_server
:interfaceMarker
```

Refer to `CORBA::ORB::object_to_string()` for a description of these fields. The target object may not exist (it is not pinged).

Return Value Returns an object reference. This may be a null object if the string passed in the parameter `obj_ref_string` is not a recognised stringified object reference format.

Notes CORBA compliant.

See Also

```
CORBA::ORB::string_to_object(
   const char* host,
   const char* serverName,
   const char* marker,
   const char* IFR_host,
   const char* IFR_server,
   const char* interfaceMarker),
CORBA::ORB::object_to_string()
CORBA::ORB::pingDuringBind()
CORBA::Object::Object(const char* obj_ref_string);
```

CORBA::ORB::supportBidirectionalIIOP()

Synopsis

```
CORBA::Boolean supportBidirectionalIIOP(
   CORBA::Boolean on,
   Environment& env=default_environment);
```

Description When an Orbix client connects to an Orbix server, Orbix opens a single connection through which all communications from the client to the server pass. If the server then obtains a reference to an object located in the client, *and* the client and server communicate using the CORBA Internet Inter-ORB Protocol

(IIOP), Orbix opens a second connection from the server to the client. If the server attempts to call operations on the client object, this second connection is used.

In some circumstances, for example when using IONA Technologies' Orbix Wonderwall product, it may be useful to allow all IIOP communications to travel in both directions between client and server across a *single* connection. This function allows you to specify whether or not Orbix should use this form of bidirectional IIOP communications.

Parameters

on	A non-zero value (true) enables bidirectional IIOP. A zero value (false) disables bidirectional IIOP. By default, bidirectional IIOP is disabled.

Return Value Returns the previous setting.

Notes Orbix specific.

CORBA::ORB::string_to_object()

Synopsis

```
Object_ptr string_to_object(
   const char* host,
   const char* serverName,
   const char* marker,
   const char* IFR_host,
   const char* IFR_server,
   const char* interfaceMarker,
   Environment& env = default_environment);
```

Description Creates an object from the strings given as arguments to an object reference.

Parameters

host	The host name of the target object.
serverName	The name of the target object's server.
marker	The object's marker name.
IFR_host	The name of a host running an Interface Repository that stores the target object's IDL definition.
IFR_server	The string "IFR".

interfaceMarker	The target object's interface.

Return Value Returns an Orbix object reference constructed from the parameters passed to the function.

Notes Orbix specific.

See Also
```
CORBA::ORB::string_to_object()
CORBA::ORB::object_to_string()
CORBA::Object::Object(const char* host,
   const char* serverName,
   const char* marker,
   const char* IFR_host,
   const char* IFR_server,
   const char* interfaceMarker)
```

CORBA::ORB::unregisterIOCallbackObject()

Synopsis
```
CORBA::Boolean unregisterIOCallbackObject(
   unsigned char eventType, IT_IOCallback *obj);
```

Description This function removes a callback object registered using `CORBA::ORB::registerIOCallbackObject()`.

Parameters

eventType	This parameter indicates which file descriptors should no longer be monitored with respect to the callback object being unregistered. The value of this parameter is `CORBA::OrbixIO`, `CORBA::ForeignIO`, or a logical combination of these.
obj	The callback object to be unregistered.

Return Value Returns a non-zero (true) value if the object is successfully unregistered. Returns zero (false) otherwise.

Notes Orbix specific.

See Also
```
CORBA::ORB::addForeignFD()
CORBA::ORB::registerIOCallback()
CORBA::IT_IOCallback
```

CORBA::ORB::useTransientPort()

Synopsis

```
Boolean useTransientPort(Boolean value);
```

Description An IOR by default contains the daemon's port; however this behaviour is configurable. You can replace the daemon's port number with the server's transient port by calling this API. In addition, you can use the `-port` switch with the `putit` utility to specify the actual port that you want the server to run on. If this switch is not used, the daemon assigns the port.

Calling `CORBA::Orbix.useTransientPort(1)` sets the IIOP port to the port that the server is actually listening on.

Return Value Returns the previous setting.

See Also `CORBA::ORB::makeIOR()`
`CORBA::ORB::useHostNameInIOR()`

CORBA::ORB::useHostNameInIOR()

Synopsis

```
void useHostNameInIOR(Boolean val,
   Environment &env=IT_chooseDefaultEnv ());
```

Description By default a server exports IORs containing the host name as given by the system call `gethostname()`. This API configures the server to put the hostname or IP address into the IOR. To set export the host name in the IOR, set the parameter val to `TRUE`; to export IP address, set it to `FALSE`.

See Also `CORBA::ORB::makeIOR()`
`CORBA::ORB::useTransientPort()`

CORBA::Principal

Synopsis Class `CORBA::Principal` implements the IDL pseudo interface `Principal`, which represents information about principals (end-users). This information may be used to provide authentication and access control.

CORBA

```
// Pseudo IDL
pseudo interface Principal {};
```

Orbix

```
// C++
class Principal {
public:
   static Principal_ptr IT_create(
      const char* obj,
      Environment& env = default_environment);

   static Principal_ptr _duplicate(
      Principal_ptr obj,
      Environment& env = default_environment);

   static Principal_ptr _nil(
      Environment& env = default_environment);
};
```

Notes CORBA compliant.

See Also `CORBA::BOA::get_principal()`

CORBA::Principal::Principal()

Synopsis

```
Principal();
```

Description Default constructor.

Notes Orbix specific.

See Also `CORBA::Principal::IT_create()`

CORBA::Principal::_duplicate()

Synopsis

```
static Principal_ptr _duplicate(
   Principal_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns a reference to self.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::Principal::_nil()

Synopsis

```
static Principal_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for a `Principal` object.

Notes CORBA compliant.

See Also `CORBA::is_nil()`

CORBA::Principal::IT_create()

Synopsis

```
static Principal_ptr IT_create(
   const char* obj,
   Environment& env = default_environment);
```

Description In the absence of a CORBA specified way to create a `Principal` pseudo object in the current standard C++ mapping, Orbix provides the `IT_create()` function to initialise an object reference for a `Principal`.

Use of this function is recommended in preference to C++ operator `new` to ensure memory management consistency.

Notes Orbix specific.

CORBA::Request

Synopsis

Class `CORBA::Request` supports the Dynamic Invocation Interface (DII), whereby an application may issue a request for any interface, even if that interface was unknown at the time the application was compiled.

Orbix allows invocations, which are instances of class `CORBA::Request`, to be constructed by specifying at runtime the target object reference, the operation name and the parameters. Such calls are termed "dynamic" because the IDL interfaces used by a program do not have to be "statically" determined at the time the program is designed and implemented.

CORBA

```
// IDL
pseudo interface Request {
   readonly attribute Object target;
   readonly attribute Identifier operation;
   readonly attribute NVList arguments;
   readonly attribute NamedValue result;
   readonly attribute Environment env;

   attribute Context ctx;

   Status invoke();
   Status send_oneway();
   Status send_deferred();
   Status get_response();
   boolean poll_response();
};
```

Orbix

```
// C++
class  Request : public IT_PseudoIDL {
public:
   Status invoke();

   Status get_response();

   Object_ptr target(
      Environment& env = default_environment) const;
```

```
const char* operation(
   Environment& env = default_environment) const;

NVList_ptr arguments(
   Environment& env = default_environment);

NamedValue_ptr result(
   Environment& env = default_environment);

Environment_ptr env(
   Environment& env = default_environment);

void ctx(Context_ptr IT_cp,
   Environment& env = default_environment);

Context_ptr ctx(
   Environment& env = default_environment) const;

Status send_oneway(
   Environment& env = default_environment);

Status send_deferred(
   Environment& env = default_environment);

Boolean poll_response(
   Environment& env = default_environment);

Request();

Request(Object_ptr target,
   const Identifier OperationName = 0,
   Environment& env = default_environment);

virtual ~Request();

void reset(ObjectRef obj=0,
   const char* OperationName = 0);
void reset(const char* OperationName);
void setOperation (const char *opname);

void setTarget(ObjectRef target);
```

```
#ifdef WANT_ORBIX_FDS
   int descriptor(void) const;
#endif

   Request& operator<<(const int& i);
   Request& operator<<(const Boolean& o);
   Request& operator<<(const Short& s);
   Request& operator<<(const Long& l);
   Request& operator<<(const LongLong& ll);
   Request& operator<<(const UShort& us);
   Request& operator<<(const ULong& ul);
   Request& operator<<(const ULongLong& ull);
   Request& operator<<(const Float& f);
   Request& operator<<(const Double& d);
   Request& operator<<(const Char& s);
   Request& operator<<(const char*& s);
   Request& operator<<(const Context& c);
   Request& operator<<(const Flags& f);
   Request& operator<<(Object* const&);
   Request& operator<<(any& a);
   Request& operator<<(const IT_FixedBase& f);

   Request& insertOctet(const Octet&);

   Request& operator>>(Short& s);
   Request& operator>>(Long& l);
   Request& operator>>(LongLong& ll);
   Request& operator>>(UShort& us);
   Request& operator>>(ULong& ul);
   Request& operator>>(ULongLong& ull);
   Request& operator>>(Float& f);
   Request& operator>>(Double& d);
   Request& operator>>(Char& c);
   Request& operator>>(Boolean& o);
   Request& operator>>(char*& s);
   Request& operator>>(ObjectRef&);
   Request& operator>>(any&);
   Request& operator>>(IT_FixedBase& f);

   Request& extractOctet(Octet&);

   void encodeCharArray(char*& s, ULong len);
   void decodeCharArray(char*& s, ULong& len);
```

```
    void encodeUCharArray(unsigned char*& s, ULong len);
    void decodeUCharArray(unsigned char*& s, ULong& len);
    void encodeShortArray(Short*& s, ULong len);
    void decodeShortArray(Short*& s, ULong& len);
    void encodeUShortArray(UShort*& s,ULong len);
    void decodeUShortArray(UShort*& s, ULong& len);
    void encodeLongArray(Long*& s, ULong len);
    void decodeLongArray(Long*& s, ULong& len);
    void encodeULongArray(ULong*& s, ULong len);
    void decodeULongArray(ULong*& s, ULong& len);
    void encodeLongLongArray(LongLong*& s, ULong len);
    void decodeLongLongArray(LongLong*& s, ULong& len);
    void encodeULongLongArray(ULongLong*& s, ULong len);
    void encodeFixedArray(IT_FixedBase*& s, ULong len);
    void decodeFixedArray(IT_FixedBase*& s, ULong& len);
    void decodeULongLongArray(ULongLong*& s, ULong& len);
    void encodeFloatArray(Float*& s, ULong len);
    void decodeFloatArray(Float*& s, ULong& len);
    void encodeDoubleArray(Double*& s, ULong len);
    void decodeDoubleArray(Double*& s, ULong& len);
    void encodeOctetArray(Octet*& s, ULong len);
    void decodeOctetArray(Octet*& s, ULong& len);
    void encodeBooleanArray(Boolean*& s, ULong len);
    void decodeBooleanArray(Boolean*& s, ULong& len);


    static Request_ptr IT_create(
        Environment& env = default_environment);

    static Request_ptr IT_create(Object_ptr target,
       const Identifier OperationName=0,
       Environment& env = default_environment,
       Boolean x=0, Boolean y=0);

    static Request_ptr _duplicate(
       Request_ptr obj,
       Environment& env = default_environment);

    static Request_ptr _nil(
       Environment& env = default_environment);
};
```

Notes CORBA compliant.

CORBA::Request::Request()

Synopsis

```
Request();
```

Description Default constructor. The target object and the operation name for the request should then be specified.

Notes Orbix specific. Refer to `CORBA::Object::_create_request()` and `CORBA::Object::_request()` for CORBA compliant ways of constructing a `Request`.

See Also

```
CORBA::Object::_create_request()
CORBA::Object::_request()
CORBA::Request::IT_create()
```

Other `Request` constructor.

CORBA::Request::Request()

Synopsis

```
Request(Object_ptr target,
   const Identifier OperationName = 0,
   Environment& env = default_environment);
```

Description Constructs a `Request`. A request is built by specifying its target object's reference.

Parameters

`target`	The object that is the target of the request.
`OperationName`	The operation name for the request. If not set here, it may be set using `CORBA::Request::setOperation()`.

Notes Orbix specific. Refer to `CORBA::Object::_create_request()` and `CORBA::Object::_request()` for CORBA compliant ways of constructing a `Request`.

See Also

```
CORBA::Object::_create_request()
CORBA::Object::_request()
CORBA::Request::setOperation()
CORBA::Request::IT_create()
```

Other `Request` constructor.

CORBA::Request::~Request()

Synopsis

```
virtual ~Request();
```

Description Destructor.

Notes Orbix specific.

CORBA::Request::operator>>()

Synopsis

```
Request& operator>>(Short&);
Request& operator>>(Long&);
Request& operator>>(LongLong&);
Request& operator>>(UShort&);
Request& operator>>(ULong&);
Request& operator>>(ULongLong&);
Request& operator>>(Float&);
Request& operator>>(Double&);
Request& operator>>(Char&);
Request& operator>>(Boolean&);
Request& operator>>(char*&);
Request& operator>>(Object_ptr&);
Request& operator>>(Any&);
Request& operator>>(IT_FixedBase&);
```

Description Once an invocation has been made, you can examine the operation's return value using the extraction operator, `operator>>()`. If there are any `out` and `inout` parameters, these parameters are modified by the call, and no special action is required to access their values.

To extract a `CORBA::Octet` from a `Request`, the function `CORBA::Request::extractOctet()` may be used. To extract a user-defined type, Refer to `CORBA::extract()`. To extract an array, Refer to `CORBA::Request::decodeArray()`.

Return Value Returns a reference to self.

Notes Orbix specific. The CORBA compliant function is `CORBA::Request::result()`.

See Also

`CORBA::Request::result()`
`CORBA::Request::extractOctet()`
`CORBA::Request::decodeArray()`
`CORBA::extract()`

CORBA::Request::operator<<()

Synopsis

```
Request& operator<<(const Boolean&);
Request& operator<<(const Short&);
Request& operator<<(const Long&);
Request& operator<<(const LongLong&);
Request& operator<<(const UShort&);
Request& operator<<(const ULong&);
Request& operator<<(const ULongLong&);
Request& operator<<(const Float&);
Request& operator<<(const Double&);
Request& operator<<(const Char&);
Request& operator<<(const char*&);
Request& operator<<(const Context&);
Request& operator<<(const Flags&);
Request& operator<<(Object_ptr const&);
Request& operator<<(Any&);
Request& operator<<(IT_FixedBase&);
```

Description

The insertion operator, `operator<<()`, may be used to insert the parameters into a `Request`. The parameters must be inserted in the correct order and each parameter must be passed with its correct mode (otherwise the dynamic type checking will fail). The default mode is `inMode`. The manipulators `inMode`, `outMode`, and `inoutMode` affect *all subsequent* uses of `operator<<()` on a given `Request` until the next mode change.

Input (`in`) parameters are not copied into the request argument list; thus, if the values of the variables are changed between being inserted and the invocation being made, the new values are transmitted (this is done to adhere to the CORBA specification). In other words, `operator<<()` uses "call by reference" semantics, and you must be careful to ensure that the parameters remain in existence and have the desired values when the invocation of the `Request` is actually made. An example of an error is to insert a local variable within a function and to return from the function before the `Request` invocation is made.

An example of the use of `operator<<()` is:

```
// IDL
long Foo(in long l, inout float f, out char c);
```

Parameters can be inserted as follows:

```
// C++
CORBA::Long l = 4L;
```

```
CORBA::Float fl = 8.9;
char ch;
// r is an object of type CORBA::Request.
r << l
  << CORBA::inoutMode << fl
  << CORBA::outMode << ch;
```

The parameters to a request are dynamically type checked by Orbix on the server's node, when the request arrives at the remote object.

Parameters inserted using `operator<<()` are, by default nameless. The name of a parameter can be given explicitly using `CORBA::arg()`:

```
// C++
// Insert parameter "height"
r << CORBA::arg("height") << 65;
```

The naming of parameters does not remove the requirement that parameters must be inserted in the proper order. However, if the same parameter name is used again, its previous value is replaced with the new value.

Note that `arg()` affects only the *next* use of `operator<<()`.

To insert a `CORBA::Octet` into a `Request`, the function `Request::insertOctet()` must be used. To insert a user-defined type, see `CORBA::insert()`. To insert an array see `CORBA::Request::encodeArray()`.

Return Value Returns a reference to self.

Notes Orbix specific. Refer to `CORBA::Request::arguments()` for CORBA compliant ways of constructing a `Request`.

See Also

```
CORBA::Request::insertOctet()
CORBA::Request::encodeArray()
CORBA::insert()
CORBA::arg()
```

CORBA::Request::_duplicate()

Synopsis

```
static Request_ptr _duplicate(
   Request_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns a reference to self.

Notes Orbix specific.

See Also `CORBA::release()`

CORBA::Request::_nil()

Synopsis

```
static Request_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for a `Request`.

Notes Orbix specific.

See Also `CORBA::is_nil()`

CORBA::Request::arguments()

Synopsis

```
NVList_ptr arguments(
   Environment& env = default_environment);
```

Description Returns the arguments to the `Request`'s operation in an `NVList`.

Notes CORBA compliant.

See Also `CORBA::NVList`

CORBA::Request::assumeArgsOwnership()

Synopsis

```
void assumeArgsOwnership(CORBA::Boolean val);
```

Description Specifies whether a `CORBA::Request` object should assume responsibility for the memory associated with the `arg_list` parameter passed to `CORBA::Object::_create_request()`. By default, a `CORBA::Request` object does not assume ownership of this memory.

Parameters

`val` A non-zero (true) value indicates that the `CORBA::Request` object should assume ownership of the `arg_list` parameter. A zero (false) value indicates that you should manage the memory for this parameter.

Notes CORBA compliant.

See Also `CORBA::Object::_create_request()`

CORBA::Request::assumeResultOwnership()

Synopsis

```
void assumeResultOwnership(CORBA::Boolean val);
```

Description Specifies whether a `CORBA::Request` object should assume responsibility for the memory associated with the `result` parameter passed to `CORBA::Object::_create_request()`. By default, a `CORBA::Request` object does not assume ownership of this memory.

Parameters

`val`	A non-zero (true) value indicates that the `CORBA::Request` object should assume ownership of the `result` parameter. A zero (false) value indicates that the programmer should manage the memory for this parameter.

Notes CORBA compliant.

See Also `CORBA::Object::_create_request()`

CORBA::Request::ctx()

Synopsis

```
Context_ptr ctx(
   Environment& env = default_environment) const;
```

Description Gets the `Context` associated with a request.

Notes CORBA compliant.

See Also `CORBA::Request::ctx(CORBA::Context_ptr c)`
`CORBA::Context`

CORBA::Request::ctx()

Synopsis

```
void ctx(Context_ptr c,
   Environment& env = default_environment);
```

Description Inserts a `Context` into a request.

Notes CORBA compliant.

See Also
```
CORBA::Request::ctx(CORBA::Context_ptr c);
CORBA::Context
```

CORBA::Request::decodeArray()

Synopsis
```
void decodeCharArray(char*&, ULong& len);
void decodeUCharArray(unsigned char*&, ULong& len);
void decodeShortArray(Short*&, ULong& len);
void decodeUShortArray(UShort*&, ULong& len);
void decodeLongArray(Long*&, ULong& len);
void decodeULongArray(ULong*&, ULong& len);
void decodeLongLongArray(LongLong*&, ULong& len);
void decodeULongLongArray(ULongLong*&, ULong& len);
void decodeFloatArray(Float*&, ULong& len);
void decodeDoubleArray(Double*&, ULong& len);
void decodeOctetArray(Octet*&, ULong& len);
void decodeBooleanArray(Boolean*&, ULong& len);
void decodeFixedArray(IT_FixedBase*&, ULong& len);
```

Description Once an invocation has been made, you can examine the operation's return value. These functions allow a return value which is an array of basic types to be extracted from a `Request`. If there are any `out` and `inout` parameters, these parameters are modified by the call, and no special action is required to access their values.

Parameters

`len` Contains the length of the array (after the call).

Notes Orbix specific. The CORBA compliant function is `CORBA::Request::result()`.

See Also
```
CORBA::Request::result()
CORBA::Request::encodeArray()
CORBA::Request::operator>>()
CORBA::Request::extractOctet()
CORBA::extract()
```

CORBA::Request::descriptor()

Synopsis

```
#ifdef WANT_ORBIX_FDS
   int descriptor(void) const;
#endif
```

Description Returns the file descriptor associated with a request. This function is defined only if the following C++ preprocessor directive is issued in the C++ file before including `CORBA.h`.

```
#define WANT_ORBIX_FDS
```

Notes Orbix specific.

CORBA::Request::encodeArray()

Synopsis

```
void encodeCharArray(char*&, ULong len);
void encodeUCharArray(unsigned char*&, ULong len);
void encodeShortArray(Short*&, ULong len);
void encodeUShortArray(UShort*&, ULong len);
void encodeLongArray(Long*&, ULong len);
void encodeULongArray(ULong*&, ULong len);
void encodeLongLongArray(LongLong*&, ULong& len);
void encodeULongLongArray(ULongLong*&, ULong& len);
void encodeFloatArray(Float*&, ULong len);
void encodeDoubleArray(Double*&, ULong len);
void encodeOctetArray(Octet*&, ULong len);
void encodeBooleanArray(Boolean*&, ULong len);
void encodeFixedArray(IT_FixedBase*&, ULong& len);
```

Description These functions allow an array of basic types to be inserted into a `Request` as a parameter to an operation. Parameters must be inserted in the correct order.

Parameters

`len` The length of the array.

Notes Orbix specific.

See Also

`CORBA::Request::decodeArray()`
`CORBA::Request::operator<<()`
`CORBA::Request::insertOctet()`
`CORBA::insert()`

CORBA::Request::env()

Synopsis

```
Environment_ptr env(
   Environment& env = default_environment);
```

Description Returns the `Environment` associated with the request from which exceptions raised in DII calls can be accessed.

Notes CORBA compliant.

See Also `CORBA::Environment()`

CORBA::Request::extractOctet()

Synopsis

```
Request& extractOctet(Octet&);
```

Description Once an invocation has been made, you can examine the operation's return value. If there are any `out` and `inout` parameters, these parameters are modified by the call, and no special action is required to access their values. This function extracts a return value of type `octet` from a request.

The function `extractOctet()` is provided, rather than `operator<<()` because `octet` has the same C++ type as for IDL `boolean`.

Notes Orbix specific. The CORBA compliant function is `CORBA::Request::result()`.

See Also

```
CORBA::Request::insertOctet()
CORBA::Request::operator>>()
CORBA::Request::decodeArray()
CORBA::Request::result()
CORBA::extract()
```

CORBA::Request::get_response()

Synopsis

```
Status get_response();
```

Description Determines whether a request has completed successfully. It returns only when the request (invoked using `send_deferred()`) has completed. If return value indicates success, the `out` and `inout` parameters and return values defined in the `Request` are valid.

Return Value Returns `1` (true) if the `Request` completed successfully; returns `0` (false) otherwise.

Notes CORBA compliant.

See Also
```
CORBA::Request::result()
CORBA::Request::send_deferred()
```

CORBA::Request::insertOctet()

Synopsis
```
Request& insertOctet(const Octet& o);
```

Description Inserts a parameter of type `octet` into a request. The parameters must be inserted in the correct order.

The function `insertOctet()` is provided, rather than `operator<<()` because `octet` has the same C++ type as for IDL `boolean`.

Notes Orbix specific.

See Also
```
CORBA::Request::operator<<()
CORBA::Request::encodeArray()
CORBA::insert()
CORBA::Request::extractOctet()
```

CORBA::Request::invoke()

Synopsis
```
Status invoke();
```

Description Instructs Orbix to make a request. The parameters to the request must already be set up. The caller is blocked until the request has been processed by the target object or an exception occurs.

To make a non-blocking request, see `CORBA::Request::send_deferred()` and `CORBA::Request::send_oneway()`.

Return Value Returns `1` (true) if successful, `0` (false) otherwise.

Notes CORBA compliant.

See Also
```
CORBA::Request::send_oneway()
CORBA::Request::send_deferred()
CORBA::Request::result()
```

CORBA::Request::IT_create()

Synopsis

```
static Request_ptr IT_create(Object_ptr target,
   const Identifier OperationName = 0,
   Environment& env = default_environment);
static Request_ptr IT_create(
   Environment& env = default_environment);
```

Description For consistency with other pseudo object types for which there is no CORBA specified way in the current C++ mapping to obtain an object reference, Orbix provides the `IT_create()` function for class `Request`. To ensure memory management consistency, you should not use the C++ `new` operator to create an `Request`.

Refer to the corresponding constructor for details of the parameters to `IT_create()`.

Notes Orbix specific. Refer to `CORBA::Object::_create_request()` and `CORBA::Object::_request()` for CORBA compliant ways of creating a `Request`.

See Also `CORBA::Object::_create_request()`
`CORBA::Object::_request()`

`Request` constructors.

CORBA::Request::operation()

Synopsis

```
const char* operation(
   Environment& env = default_environment) const;
```

Description Gets the `Request`'s operation name.

Notes CORBA compliant.

See Also `CORBA::Request::setOperation()`

CORBA::Request::poll_response()

Synopsis

```
Boolean poll_response(
   Environment& env = default_environment);
```

Description A caller who makes an operation request using `send_deferred()` may call `poll_response()` to determine whether the operation has completed. The function returns immediately. If the operation has completed, the result is available in the `Request`.

Return Value Returns `1` (true) if the operation has completed successfully indicating that the return value and `out` and `inout` parameters in the `Request` are valid; returns `0` (false) otherwise.

Notes CORBA compliant.

See Also

```
CORBA::Request::send_oneway()
CORBA::Request::send_deferred()
CORBA::Request::get_response()
CORBA::ORB::poll_next_response()
```

CORBA::Request::reset()

Synopsis

```
void reset(const char* operationName);
void reset(Object_ptr obj = 0,
   const char* OperationName = 0);
```

Description Allows a `Request` object to be reused. You can individually reset the target object and the operation name or both.

Parameters

`obj`	The target object. (If set to `0`, the target object is not reset.)
`operationName`	The operation name.

Notes Orbix specific.

CORBA::Request::result()

Synopsis

```
NamedValue_ptr result(
   Environment& env = default_environment);
```

Description Returns the result of the operation request in a `NamedValue`.

Notes CORBA compliant.

See Also

```
operator>>()
CORBA::extract()
CORBA::extractOctet()
CORBA::decodeArray()
```

CORBA::Request::send_deferred()

Synopsis

```
Status send_deferred(
   Environment& env = default_environment);
```

Description Instructs Orbix to make the request. The arguments to the request must already be set up. The caller is not blocked, and thus may continue in parallel with the processing of the call by the target object.

You can use the function `CORBA::poll_response()` to determine whether the operation completed.

You can use the function `CORBA::get_response()` to determine the outcome of the request. Memory leakage results if this function is not called for a request issued with `send_deferred()`.

To make a blocking request, see `CORBA::Request::invoke()`.

Return Value Returns `1` (true) if successful, `0` (false) otherwise.

Notes CORBA compliant.

See Also

```
CORBA::Request::send_oneway()
CORBA::ORB::send_multiple_requests_deferred()
CORBA::Request::invoke()
CORBA::Request::poll_response()
CORBA::Request::get_response()
```

CORBA::Request::send_oneway()

Synopsis

```
Status send_oneway(
   Environment& env = default_environment);
```

Description Instructs Orbix to make the oneway request. The arguments to the request must already be set up. The caller is not blocked, and thus may continue in parallel with the processing of the call by the target object.

This function may be used even if the operation has not been defined to be `oneway` in its IDL definition. The caller should not expect any `in` or `inout` parameters to be updated.

To make a blocking request, see `CORBA::Request::invoke()`.

Return Value Returns `1` (true) if successful, `0` (false) otherwise.

Notes CORBA compliant.

See Also

`CORBA::Request::send_deferred`
`CORBA::ORB::send_multiple_requests_oneway()`
`CORBA::Request::invoke()`
`CORBA::Request::poll_response()`
`CORBA::Request::get_response()`

CORBA::Request::setOperation()

Synopsis

```
void setOperation(const char* opname);
```

Description Sets the operation name for the request.

Notes Orbix specific.

See Also

`CORBA::Request::operation()`
`CORBA::Request::_create_request()`
`CORBA::Request::_request()`

CORBA::Request::set_return_type()

Synopsis

```
void set_return_type(TypeCode_ptr tc,
   Environment& env = default_environment);
```

Description When using the DII with the CORBA Internet Inter-ORB Protocol (IIOP), you must set the return type of a request before invoking the request. This function allows you to specify the TypeCode associated with a request when setting up a CORBA::Request object.

Parameters

tc	The TypeCode for the return type of the operation associated with the CORBA::Request object.

Notes CORBA compliant.

CORBA::Request::setTarget()

Synopsis

```
void setTarget(Object_ptr target);
```

Description Sets the Request's target object. The reference count of target is not incremented.

Notes Orbix specific.

See Also CORBA::Request::target()

CORBA::Request::target()

Synopsis

```
Object_ptr target(
   Environment& env = default_environment) const;
```

Description Gets the Request's target object.

Notes CORBA compliant.

See Also CORBA::Request::setTarget()

CORBA::ServerRequest

Synopsis

Class `ServerRequest` describes a Dynamic Skeleton Interface (DSI) operation request. It is analogous to the `Request` class used in the Dynamic Invocation Interface (DII).

An instance of `ServerRequest` is created by Orbix when it receives an incoming request that is to be handled by the DSI—that is, an instance of `CORBA::DynamicImplementation` has been registered to handle the target interface.

An instance of `ServerRequest` is a pseudo-object so an instance of a `ServerRequest` cannot be transmitted in an IDL operation.

You should not define derived classes of `ServerRequest`.

CORBA

```
// IDL
pseudo interface ServerRequest {
   Identifier op_name();
   Context ctx();
   attribute any result;[1]
   void params(inout NVList parms);

   // The following are Orbix specific:
   readonly attribute Object target;
   readonly attribute Identifier operation;
      // Synonym for op_name().
   attribute NVList arguments;
      // Closely related to params()
   attribute any exception;
   attribute Environment env;
};
```

1. The standard specifies this to be an operation; that is, the value can only be read.

Orbix

```
// C++
class ServerRequest {
public:
   virtual const char* op_name(
      Environment& IT_env = default_environment) const = 0;

   virtual Context_ptr ctx(
      Environment& IT_env = default_environment) const = 0;

   virtual void params(NVList_ptr,
      Environment& IT_env = default_environment) = 0;

   virtual Any* result(
      Environment& IT_env = default_environment) = 0;

   virtual OperationDef_ptr op_def(
      Environment& IT_env = default_environment) = 0;

   virtual void result(CORBA::Any*,
      Environment& IT_env = default_environment) = 0;

   virtual void exception(CORBA::Any*,
      Environment& IT_env = default_environment) = 0;

   virtual Object_ptr target(
      Environment& IT_env = default_environment) const = 0;

   virtual const char* operation(
      Environment& IT_env = default_environment) const = 0;

   virtual NVList_ptr arguments(
      Environment& IT_env = default_environment) = 0;

   virtual void arguments (NVList_ptr,
      Environment& IT_env = default_environment) = 0;

   virtual Environment_ptr env(
      Environment& IT_env = default_environment) = 0;
   virtual void env(Environment_ptr,
      Environment& IT_env = default_environment) = 0;
```

```
protected:
   ServerRequest();
   virtual ~ServerRequest();
   ServerRequest* operator&();
   const ServerRequest* operator&() const;
};
```

Notes CORBA compliant.

See Also `CORBA::DynamicImplementation`

CORBA::ServerRequest::ServerRequest()

Synopsis

```
ServerRequest();
```

Description Default constructor. The constructor is protected because instances of `ServerRequest` are intended to be created and destroyed by Orbix.

Notes CORBA compliant.

CORBA::ServerRequest::~ServerRequest()

Synopsis

```
virtual ~ServerRequest();
```

Description Destructor. The destructor is protected because instances of `ServerRequest` are intended to be created and destroyed by Orbix.

Notes CORBA compliant.

CORBA::ServerRequest::arguments()

Synopsis

```
arguments(NVList_ptr nvl,
   Environment& IT_env = default_environment) = 0;
```

Description Allows (a redefinition of) `CORBA::DynamicImplementation::invoke()` to specify the values of incoming arguments and to return `out` and `inout` arguments.

It must be called *exactly* once in each execution of the `invoke()` function.

Notes Orbix specific. Added for symmetry with `CORBA::Request`. See `CORBA::ServerRequest::params()` for CORBA compliant version of this function.

See Also `CORBA::ServerRequest::params()`
`CORBA::DynamicImplementation::invoke()`

CORBA::ServerRequest::ctx()

Synopsis

```
Context_ptr ctx(
   Environment& IT_env = default_environment) const = 0;
```

Description Gets the `Context` associated with the call. It can be called at most once. If it is called, it must be called before `CORBA::ServerRequest::params()` or `CORBA::ServerRequest::arguments()`.

Notes Orbix specific. Added for symmetry with `CORBA::Request`.

See Also `CORBA::Context`

CORBA::ServerRequest::exception()

Synopsis

```
virtual void exception(CORBA::Any*,
   Environment& IT_env = default_environment) = 0;
```

Description Allows the Dynamic Implementation Routine (DIR), that is, a redefinition of `CORBA::DynamicImplementation::invoke()` to return an exception to the caller. In C++, the exception is given as a pointer to a `CORBA::Any`, which holds the exception to be returned to the caller.

Notes CORBA compliant.

See Also `CORBA::Environment()`
`CORBA::DynamicImplementation::invoke()`

CORBA::ServerRequest::env()

Synopsis

```
Environment_ptr env(
   Environment& IT_env = default_environment);
```

Description Returns the `Environment` associated with the call.

Notes Orbix specific. Added for symmetry with `CORBA::Request`.

See Also `CORBA::Environment()`

CORBA::ServerRequest::env()

Synopsis

```
virtual void env(Environment_ptr,
      Environment& IT_env = default_environment) = 0;
```

Description Sets the `Environment` associated with the `ServerRequest`.

Notes Orbix specific.

See Also `CORBA::Environment()`

CORBA::ServerRequest::op_def()

Synopsis

```
OperationDef_ptr op_def(
   Environment& IT_env = default_environment) const = 0;
```

Description Returns the Interface Repository object describing the operation being invoked.

Notes CORBA compliant. Use of this function requires the code to be linked with the Interface Repository library.

See Also `CORBA::ServerRequest::operation()`

CORBA::ServerRequest::op_name()

Synopsis

```
const char* op_name(
   Environment& IT_env = default_environment) const = 0;
```

Description Gets the name of the operation being invoked.

It must be called at least once in each execution of the Dynamic Implementation Routine (DIR), that is, in each redefinition of `CORBA::DynamicImplementation::invoke()`.

Notes CORBA compliant.

See Also `CORBA::ServerRequest::operation()`
`CORBA::DynamicImplementation::invoke()`

CORBA::ServerRequest::operation()

Synopsis

```
const char* operation(
   Environment& IT_env = default_environment) const = 0;
```

Description Gets the name of the operation being invoked.

It must be called at least once in each execution of the Dynamic Implementation Routine (DIR), that is, in each redefinition of `CORBA::DynamicImplementation::invoke()`.

Notes Orbix specific. Added for symmetry with `CORBA::Request`. Refer to `CORBA::ServerRequest::op_name()` for CORBA compliant version of this function.

See Also `CORBA::ServerRequest::op_name()`
`CORBA::DynamicImplementation::invoke()`

CORBA::ServerRequest::params()

Synopsis

```
virtual void params(NVList_ptr nvl,
   Environment& IT_env = default_environment) const = 0;
```

Description Allows `CORBA::DynamicImplementation::invoke()` to specify the values of incoming arguments and to return `out` and `inout` arguments.

It must be called *exactly* once in each execution of the Dynamic Implementation Routine (DIR), that is, in each redefinition of `CORBA::DynamicImplementation::invoke()` function.

Parameters

`nvl` The argument list.

Notes CORBA compliant.

See Also `CORBA::ServerRequest::arguments()`

CORBA::ServerRequest::result()

Synopsis

```
Any* result(
   Environment& IT_env = default_environment) = 0;
```

Description Allows the `CORBA::DynamicImplementation::invoke()` operation to return the result of an operation request in a `CORBA::Any`.

Must be called once for operations with non-void return types and not at all for operations with `void` return types. If it is called, `CORBA::ServerRequest::exception()` cannot be used.

Notes Orbix specific.

See Also `CORBA::ServerRequest::exception()`

CORBA::ServerRequest::target()

Synopsis

```
Object_ptr target(
   Environment& IT_env = default_environment) const = 0;
```

Description Returns an object reference to the target object. The target object does not really exist as a normal CORBA object so this is an object (of a derived type of `CORBA::Object`) that is created by Orbix temporarily for the duration of the call.

Notes Orbix specific.

CORBA::String_var

Synopsis Class `String_var` implements the _var type for IDL strings required by the standard C++ mapping. The `String_var` class contains a `char*` value and ensures that this is properly freed when a `String_var` object is deallocated, for example by going out of scope.

Orbix

```
// C++
class String_var {
public:
   String_var();
   String_var(char* p);
   String_var(const char *p);

   String_var(const String_var& s);
   String_var(const String_mgr &s);
   String_var(const String_SeqElem &s);

   ~String_var();

   String_var& operator=(char* p);
   String_var& operator=(const String_var& s);
   String_var& operator=(const String_mgr& s);
   String_var& operator=(const String_SeqElem& s);

   operator ! () const;
   operator char*& ();
   operator const char*() const;

   Char& operator[](ULong index);
   Char operator[](ULong index) const;

   const char* in () const;
   char*& inOut ();
   char*& out ();
   char* ret () const;
};
```

Notes CORBA compliant.

CORBA::String_var::String_var()

Synopsis `String_var();`

Description Default constructor.

Notes CORBA compliant.

See Also Other constructors.

CORBA::String_var::String_var()

Synopsis `String_var(char* p);`

Description Conversion from a `char*`. The `String_var` assumes ownership of the parameter `p`.

Notes CORBA compliant.

See Also Other `String_var` constructors.

CORBA::String_var::String_var()

Synopsis `String_var(const String_var& s);`

Description Copy constructor.

Notes CORBA compliant.

See Also Other `String_var` constructors.

CORBA::String_var::~String_var()

Synopsis `~String_var();`

Description Destructor. The destructor frees the `char*` pointer using `CORBA::string_free()`.

Notes CORBA compliant.

CORBA::String_var::operator=()

Synopsis

```
String_var& operator=(char* p);
String_var& operator=(const String_var& s);
```

Description Assignment operators allowing assignment from a `char*` and from another `String_var`.

Notes CORBA compliant.

CORBA::String_var::operator[ ]()

Synopsis

```
char& operator[](ULong index);
char operator[](ULong index) const;
```

Description Subscript operators to allow read and write access of the characters in the string.

Notes CORBA compliant.

CORBA::String_var::char*()

Synopsis

```
operator const char*() const;
```

Description Converts `String_var` object to a `char*`.

Notes CORBA compliant.

CORBA::SystemException

Synopsis

The system exceptions are organised into a class hierarchy: each system exception is a derived class of `CORBA::SystemException` (which in turn is a derived class of `CORBA::Exception`). This allows all system exceptions to be caught in a single C++ `catch` clause.

The CORBA specification defines a set of system exceptions and Orbix adds a number of system exceptions that may be raised by Orbix to this set. The system exceptions defined by CORBA and Orbix are listed in Appendix B, "System Exceptions" on page 373.

If you want to handle these individual system exceptions then the following C++ macro must be defined *before* including the standard file `<CORBA.h>`:

```
#define EXCEPTIONS
```

`CORBA.h` does not normally include the specific definitions of these system exceptions to reduce its size and increase the speed of C++ compilations.

The `IT_ERRORS` entry in the Orbix configuration file may be used to specify an alternative error messages file for system exceptions if required. Refer to the *Orbix C++ Administrator's Guide* for details.

Within the errors file, you can insert comments using "`//`", and you can use "\" as a continuation character if the message needs to extend past the end of line. IDL compiler errors have been divided into pre-processing, syntax and semantic errors, and their error numbers are arranged within these divisions.

Orbix

```
// C++
class  SystemException : public Exception {
public:
   SystemException();
   SystemException(const SystemException&);
   virtual ~SystemException();

   const SystemException& operator=(const SystemException&);


   SystemException(ULong minor_id,
      CompletionStatus completed_status);
```

```
    CompletionStatus completed() const;

    void completed(CompletionStatus completed_status);

    void minor(ULong minor_val);

    static SystemException* _narrow(Exception* e);

    ULong minor() const;

    friend ostream& operator<<(ostream&,
      SystemException*);
};
```

Notes The CORBA specification does not mandate a particular implementation for the `SystemException` class—the Orbix implementation described here is compliant.

See Also `CORBA::Exception`
`CORBA::UserException`
`CORBA::Environment`

CORBA::SystemException::SystemException()

Synopsis `SystemException();`

Description Default constructor.

Notes CORBA compliant. It should not be necessary for you to use this constructor.

See Also Other `SystemException` constructors.

CORBA::SystemException::SystemException()

Synopsis

```
SystemException(ULong minor_id,
   CompletionStatus completion_status);
```

Description Constructs a new system exception with given minor code and `CompletionStatus`.

Notes CORBA compliant. It should not be necessary for you to use this constructor.

See Also

`CORBA::Exception`
`CORBA::CompletionStatus`
`CORBA::SystemException::minor()`

Other `SystemException` constructors.

CORBA::SystemException::SystemException()

Synopsis

```
SystemException(const SystemException&);
```

Description Copy constructor.

Notes CORBA compliant. It should not be necessary for you to use this constructor.

See Also Other `SystemException` constructors.

CORBA::SystemException::~SystemException()

Synopsis

```
virtual ~SystemException();
```

Description Destructor.

Notes CORBA compliant. It should not be necessary for you to use this destructor.

CORBA::SystemException::operator=()

Synopsis

```
const SystemException& operator=(const SystemException&);
```

Description Assignment operator.

Notes CORBA compliant. It should not be necessary for you to use this operator.

operator<<()

Synopsis

```
friend ostream& operator<<(ostream& o,
   SystemException* se);
```

Description Overloads `operator<<()` to output the `SystemException se` on `ostream o`. The output of this operator takes the format:

```
<_major>: <_id> <explanatory text string> \n
```

Notes Orbix specific.

CORBA::SystemException::_narrow()

Synopsis

```
static SystemException* _narrow(Exception* e);
```

Description Narrows `Exception e` to a `SystemException`. If the runtime type of `e` is not of class `SystemException` or one of its derived classes, `_narrow()` returns a null pointer. Otherwise, `_narrow()` returns a valid `SystemException` pointer. If `e` is a null pointer, `_narrow()` also returns a null pointer. Use of this function is necessary only when a C++ compiler does not support C++ exception handling.

Notes CORBA compliant.

CORBA::SystemException::completed()

Synopsis

```
CompletionStatus completed() const;
```

Description Returns an indication of the status of an operation at the time the exception was raised. This is one of `COMPLETED_YES`, `COMPLETED_NO`, or `COMPLETED_MAYBE`.

Notes CORBA compliant.

See Also `CORBA::SystemException::completed()`
`CORBA::CompletionStatus`

CORBA::SystemException::completed()

Synopsis

```
void completed(CompletionStatus
   completion_status);
```

Description Sets the status of an operation at the time an exception is raised. This is one of COMPLETED_YES, COMPLETED_NO, or COMPLETED_MAYBE.

Notes CORBA compliant. It should not be necessary for you to use this function.

See Also CORBA::SystemException::completed()
CORBA::CompletionStatus

CORBA::CompletionStatus

Synopsis

```
enum CompletionStatus {
   COMPLETED_YES, COMPLETED_NO, COMPLETED_MAYBE };
```

Description Enumerates the possible operation completion status values at the time an exception is raised.

COMPLETED_YES	The requested operation had completed processing prior to the exception being raised.
COMPLETED_NO	The requested operation was never initiated.
COMPLETED_MAYBE	It is indeterminate whether the requested operation was ever initiated, and if it was whether it completed processing prior to the exception being raised.

Notes CORBA compliant.

See Also CORBA::SystemException::completed()

CORBA::SystemException::minor()

Synopsis

```
ULong minor() const;
```

Description Returns a code describing the type of the system exception. In Orbix, this code is used to index into the ErrorMsgs file to extract the appropriate message.

Notes CORBA compliant.

See Also `CORBA::minor(CORBA::ULong minor_id)`

CORBA::SystemException::minor()

Synopsis `void minor(ULong minor_id);`

Description Sets the code, describing the type of the system exception.

Notes CORBA compliant. It should not be necessary for you to use this function.

See Also `CORBA::minor()`

CORBA::ThreadFilter

Synopsis

`CORBA::ThreadFilter` is a derived class of class `CORBA::Filter`. A per-process filter's `inRequestPreMarshal()`function can create a thread to handle an incoming request. To do this, the filter must inherit from `CORBA::ThreadFilter`. The `inRequestPreMarshal()` function should use an underlying threads package—for example, the Solaris threads package—to create a thread, and the thread should then handle the request, possibly by instructing Orbix to send the invocation to the target object. The `inRequestPreMarshal()` function should return `-1` to Orbix to indicate that a dispatch on a new thread has occurred.

Instances of `CORBA::ThreadFilter` are installed before any user filters in the filter chain. More than one thread filter can be installed, but processing of the chain of thread filters ceases once one of them creates a thread (processing of the filter chain continues if the `inRequestPreMarshal()` function of a thread filter returns `1`). Deriving from class `CORBA::ThreadFilter` ensures that the thread filter is at the start of the filter chain.

A server has a single thread to handle requests if it has no thread filter. Thus a non-threaded server handles one request at a time. If a server makes a nested remote call, the server temporarily buffers further requests if they arrive before the remote call returns.

Orbix

```
// C++
class CORBA::ThreadFilter : public CORBA::Filter {
protected:
   ThreadFilter();
};
```

Notes

Orbix specific.

See Also

`CORBA::Filter`
`CORBA::AuthenticationFilter`

CORBA::ThreadFilter::ThreadFilter()

Synopsis

```
ThreadFilter();
```

Description

The constructor adds the newly created filter object to the chain immediately before any user filters (this is the end of the per-process filter chain if there are no user filters).

Direct instances of `ThreadFilter` cannot be created: the constructor is protected to enforce this.

Notes

Orbix specific.

CORBA::TypeCode

Synopsis

The C++ class `CORBA::TypeCode` implements the IDL pseudo interface `TypeCode`. `TypeCode` is used to describe arbitrary complex IDL type structures at runtime. A `TypeCode` consists of a *kind* and a sequence of *parameters* (a parameter is of type `CORBA::Any`). The kind classifies the `TypeCode`: for example, whether it is a basic type, a struct, a sequence and so on. The parameters give the details of the type definition. For example, the IDL type `sequence<long, 20>` has the kind `tk_sequence` and has parameters `long` and `20`.

The parameters of each `TypeCode` are:

KIND	PARAMETER LIST
`tk_null`	`NONE`
`tk_void`	`NONE`
`tk_short`	`NONE`
`tk_long`	`NONE`
`tk_longlong`	`NONE`
`tk_ushort`	`NONE`
`tk_ulong`	`NONE`
`tk_ulonglong`	`NONE`
`tk_float`	`NONE`
`tk_double`	`NONE`
`tk_boolean`	`NONE`
`tk_char`	`NONE`
`tk_octet`	`NONE`

KIND	PARAMETER LIST
tk_any	NONE
tk_TypeCode	NONE
tk_Principal	NONE
tk_fixed	{ digits, scale }
tk_objref	{ interface-id }
tk_struct	{ struct-name, member-name, TypeCode, ...<repeat pairs>... }
tk_union	{ union-name, switch-TypeCode, label-value, member-name, TypeCode, ...<repeat triples>... }
tk_enum	{ enum-name, enum-id, ...<repeat enum-id>... }
tk_string	{ maxlen-integer }
tk_sequence	{ TypeCode, maxlen-integer }
tk_array	{ TypeCode, length-integer, <repeat length-integer>... }

A TypeCode of kind tk_fixed has two parameters: two integers representing the digits, and the scale of the fixed type.

A TypeCode of kind tk_objref has a single parameter giving the interface name.

A TypeCode of kind tk_struct has one parameter giving the struct name, and has two parameters for each member of the struct: the first giving the member's name and the second giving its TypeCode. A struct with N members has 2N+1 parameters.

A TypeCode of kind tk_union has parameters giving the union name, the TypeCode of the switch (discriminator) of the union, and then three parameters for each member of the union:

- the label value
- the member name
- the member's TypeCode.

If the union has a default member, the triple for this has a label-value of 0 and the TypeCode of the corresponding any returned by parameter() is the TypeCode for an octet, which is not a valid switch type for a union. Thus this 0 can be distinguished from a normal 0 switch value.

A TypeCode of kind tk_enum has one parameter giving the enum name, and then one parameter for each enumerate constant. Enumerate constants are represented as strings.

A TypeCode of kind tk_string has one parameter—an integer giving the maximum length of the string. A 0 length indicates an unbounded string.

A TypeCode of kind tk_sequence has two parameters: a TypeCode for the element types, and a CORBA::ULong for the length. A 0 length indicates an unbounded sequence.

A TypeCode of kind tk_array has N+1 parameters, where N is the number of dimensions of the array. The first parameter is a TypeCode for the element types; the remainder are of type long.

Note that a TypeCode for an IDL exception is of kind tk_struct and has the same parameters as a TypeCode for a struct.

An IDL operation with a parameter of type TypeCode is translated into a C++ function with a parameter of type TypeCode_ptr. This is an object reference for a TypeCode. A declaration for the object which it references can be generated by the IDL compiler from named type definitions that appear in an IDL file—that is, from the following types:

```
interface
typedef
struct
union
enum
```

A number of TypeCode object reference constants are always available to allow the user to access TypeCodes for standard types. They are in CORBA.h:

CORBA::_tc_null	CORBA::_tc_void
CORBA::_tc_short	CORBA::_tc_long

```
CORBA::_tc_ushort              CORBA::_tc_ulong
CORBA::_tc_float               CORBA::_tc_double
CORBA::_tc_boolean             CORBA::_tc_char
CORBA::_tc_octet               CORBA::_tc_any
CORBA::_tc_TypeCode            CORBA::_tc_Principal
CORBA::_tc_Object              CORBA::_tc_string
CORBA::_tc_NamedValue
```

CORBA

```
// IDL
// In module CORBA-ac
enum TCKind {
      tk_null, tk_void,
      tk_short, tk_long, tk_ushort, tk_ulong,
      tk_float, tk_double, tk_boolean, tk_char,
      tk_octet, tk_any, tk_TypeCode, tk_Principal,
      tk_objref, tk_struct, tk_union, tk_enum,
      tk_string, tk_sequence, tk_array,
      tk_alias, tk_except, tk_longlong, tk_ulonglong,
      tk_longdouble, tk_wchar, tk_wstring, tk_fixed
};
exception Bounds {};
pseudo interface TypeCode {
   TCKind kind();
   long param_count();
   any parameter(in long index) raises(Bounds);
   boolean equal(in TypeCode tc);
};
```

Orbix

```
// C++
class TypeCode {
public:
   TypeCode();

   TypeCode(const TypeCode&);

   ~TypeCode();

   const TypeCode& operator=(const TypeCode& src);

   operator char*() const;
```

```
    CORBA::Boolean equal(TypeCode_ptr tc,
       Environment& env = default_environment) const;
    int operator==(const TypeCode& tc) const;
    int operator!=(const TypeCode& tc) const;

    TCKind kind(
       Environment& env = default_environment) const;

    Long param_count(
       Environment& env = default_environment) const;

    Any parameter(Long index,
       Environment& env = default_environment) const;
    static TypeCode_ptr IT_create(const char* tc,
       Environment& = default_environment);

    static TypeCode_ptr IT_create(const TypeCode_ptr& tc,
       Environment& = default_environment);

    static TypeCode_ptr _duplicate(
       TypeCode_ptr,
       Environment &env = default_environment);

    static TypeCode_ptr _nil(
       Environment& env = default_environment);
};
```

CORBA::TypeCode::TypeCode()

Synopsis `TypeCode();`

Description Default constructor. The `TypeCode` is created with the default kind, `tk_null`.

Notes Orbix specific.

See Also `CORBA::TypeCode::IT_create()`

Other `TypeCode` constructor.

CORBA::TypeCode::TypeCode()

Synopsis `TypeCode(const TypeCode&);`

Description Copy constructor.

Notes Orbix specific.

See Also `CORBA::TypeCode::IT_create()`

Other `TypeCode` constructor.

CORBA::TypeCode::~TypeCode()

Synopsis `~TypeCode();`

Description Destructor.

Notes Orbix specific.

CORBA::TypeCode::operator=()

Synopsis `const TypeCode& operator=(const TypeCode& tc);`

Description Assignment operator.

Notes Orbix specific.

CORBA::TypeCode::operator==()

Synopsis `int operator==(const TypeCode& tc) const;`

Description Compares self with `tc`. Two `TypeCodes` are equal when the IDL definitions from which they are compiled denote equal types.

Return Value Returns `1` (true) if the `TypeCodes` are equal; returns `0` (false) otherwise.

Notes Orbix specific.

`CORBA::TypeCode::equal()` is the CORBA compliant version of this function.

See Also `CORBA::TypeCode::equal()`

`CORBA::TypeCode::operator!=()`

CORBA::TypeCode::operator!=()

Synopsis `int operator!=(const TypeCode& tc) const;`

Description Compares self with `tc`. Two `TypeCode`s are equal when the IDL definitions from which they are compiled denote equal types.

Return Value Returns `1` (true) if the `TypeCode`s are not equal; returns `0` (false) otherwise.

Notes Orbix specific.

See Also `CORBA::TypeCode::operator==()`
`CORBA::TypeCode::equal()`

CORBA::TypeCode::_duplicate()

Synopsis
```
static TypeCode_ptr _duplicate(TypeCode_ptr obj,
   Environment& env = default_environment);
```

Description Increments the reference count of `obj`.

Return Value Returns the object whose reference count has been incremented.

Notes CORBA compliant.

See Also `CORBA::release()`

CORBA::TypeCode::_nil()

Synopsis
```
static TypeCode_ptr _nil(
   Environment& env = default_environment);
```

Description Returns a nil object reference for a `TypeCode`.

Notes CORBA compliant.

See Also `CORBA::is_nil()`

CORBA::TypeCode::equal()

Synopsis

```
Boolean equal(TypeCode_ptr tc,
   Environment& env = default_environment) const;
```

Description Compares self with tc. Two TypeCodes are equal when the IDL definitions from which they are compiled denote equal types.

Return Value Returns true if the TypeCodes are equal; returns false otherwise.

Notes CORBA compliant.

See Also CORBA::TypeCode::operator==()
CORBA::TypeCode::operator!=()

CORBA::TypeCode::IT_create()

Synopsis

```
static TypeCode_ptr IT_create(const TypeCode_ptr& tc,
   Environment& = default_environment);
```

Description In the absence of a CORBA specified way to create a TypeCode pseudo object in the current standard C++ mapping, Orbix provides the IT_create() function to initialise an object reference for a TypeCode.

Use of this function is recommended in preference to C++ operator new to ensure memory management consistency.

Notes Orbix specific

CORBA::TypeCode::kind()

Synopsis

```
TCKind kind(
   Environment& env = default_environment) const;
```

Description Finds the kind of the TypeCode, an enumerated value of type TCKind.

Notes CORBA compliant.

CORBA::TypeCode::param_count()

Synopsis

```
Long param_count(
   Environment& env = default_environment) const;
```

Description Finds the number of parameters belonging to the TypeCode. For example, the IDL type sequence<long, 20> has two parameters: long and 20.

Return Value Returns the number of parameters.

Notes CORBA compliant.

CORBA::TypeCode::parameter()

Synopsis

```
Any parameter(Long index,
   Environment& env = default_environment) const;
```

Description Finds the parameter specified by index. For example, the IDL type sequence<long, 20> has two parameters: long and 20. Parameters are indexed from 0 to (param_count()-1).

Exceptions A CORBA::Bounds exception is raised if an attempt is made to access a non-existent parameter.

Notes CORBA compliant.

CORBA::UserCVHandler

Synopsis

Orbix provides a configuration file, `iona.cfg`, to configure Orbix. On UNIX, environment variables may override the entries specified in the Orbix configuration file. On Windows NT and Windows 95, Orbix is, by default, configured using the System Registry.

You may additionally configure aspects of Orbix at runtime by providing one or more configuration value handlers that configure some or all configuration entries.

Class `UserCVHandler` is an abstract base class that defines the interface for Orbix configuration value handlers. You can create a configuration value handler by implementing a derived class of `CORBA::UserCVHandler`, creating an instance of this class and activating it.

You can arrange active configuration handlers explicitly using the functions `CORBA::Orbix::PlaceCVHandlerBefore()` and `CORBA::Orbix::PlaceCVHandlerAfter()`. If not explicitly ordered, handlers are called in reverse order of instantiation: the last handler to be instantiated is the first handler to be called.

Note: If you are migrating from Orbix 2.x and use `PlaceCVHandlerBefore()` or `PlaceCVHandlerAfter()`, you should update your code to specify `IT_ScopedConfigFile` instead of the old `IT_ConfigFile` or `IT_Registry` handlers. Refer to the *Orbix C++ Administrator's Guide* for more details.

Orbix

```
// C++
class UserCVHandler {
public:
   UserCVHandler(const char* identifier);
   virtual ~UserCVHandler();
   virtual unsigned int GetValue(const char* name,
      char*& value) = 0;
};
```

Notes

Orbix specific.

See Also

```
CORBA::ORB::GetConfigValue()
CORBA::ORB::SetConfigValue()
CORBA::ORB::ActivateCVHandler()
CORBA::ORB::DeactivateCVHandler()
CORBA::ORB::PlaceCVHandlerBefore()
CORBA::ORB::PlaceCVHandlerAfter()
CORBA::ORB::ReinitialiseConfig()
```

CORBA::UserCVHandler::UserCVHandler()

Synopsis

```
UserCVHandler(const char* identifier);
```

Description Constructor.

Parameters

`identifier`	The name of the configuration value handler.

Notes Orbix specific.

CORBA::UserCVHandler::~UserCVHandler()

Synopsis

```
virtual ~UserCVHandler();
```

Description Destructor.

Notes Orbix specific.

CORBA::UserCVHandler::GetValue()

Synopsis

```
virtual unsigned int GetValue(const char* name,
   char*& value) = 0;
```

Description Obtains the value of the configuration entry named in `name`. A derived class must implement this function.

Parameters

`name`	The name of the configuration entry, for example, `IR_DAEMON_PORT`.
`value`	The value of the configuration entry specified in `name`, for example, `"1507"`.

Return Value Returns `1` (true) if a value for the specified configuration entry is found, returns `0` (false) otherwise. If no value is found by this handler (that is, `GetValue()` returns `0`) the next configuration value handler in the list, if any, is tried.

Notes Orbix specific.

CORBA::UserException

Synopsis The user exceptions are organized into a class hierarchy: each user exception is mapped to a derived class of `CORBA::UserException` (which in turn is a derived class of `CORBA::Exception`).

Orbix

```
// C++
class UserException : public CORBA::Exception {
public:
   UserException();
   UserException(const UserException&);

   static UserException* _narrow(Exception* e);

};
```

Notes The CORBA specification does not mandate a particular implementation for the `UserException` class—the implementation described here is compliant.

See Also

```
CORBA::Exception
CORBA::SystemException
CORBA::Environment
```

CORBA::UserException::UserException()

Synopsis

```
UserException();
```

Description Default constructor.

Notes CORBA compliant.

See Also Other `UserException` constructors.

CORBA::UserException::UserException()

Synopsis
```
UserException(const UserException&);
```

Description Copy constructor.

Notes CORBA compliant.

See Also Other `UserException` constructors.

CORBA::UserException::operator=()

Synopsis
```
const UserException& operator=(const UserException&);
```

Description Assignment operator.

Notes CORBA compliant.

CORBA::UserException::_narrow()

Synopsis
```
static UserException* _narrow(
   Exception* e);
```

Description Narrows `Exception` e to a `UserException`. If the runtime type of e is not of class `UserException` or one of its derived classes, `_narrow()` returns a null pointer. Otherwise, `_narrow()` returns a valid `UserException` pointer. If e is a null pointer, `_narrow()` also returns a null pointer. Use of this function is necessary only when a C++ compiler does not support C++ exception handling.

A version of this function is generated by the IDL compiler for each user-defined exception.

Notes CORBA compliant.

CORBA::UserOutput

Synopsis

The Orbix default output handler directs all diagnostic messages to the standard output stream, `cout`. You can provide an additional output handler by implementing a derived class of the abstract base class `CORBA::UserOutput`, creating an instance of this class and activating this instance as an output handler.

An output handler may be activated using the static function `CORBA::ORB::ActivateOutputHandler()`. More than one output handler may be active at any time. Messages are sent to all active output handlers allowing, for example, all output to be directed to standard output and logged to a file.

An output handler may be deactivated using the static function `CORBA::ORB::DeactivateOutputHandler()`.

The Orbix default output handler is named `"IT_StdOutHandler"`. It may be deactivated as follows:

```
// C++
CORBA::ORB::DeactivateOutputHandler("IT_StdOutHandler");
```

Output handlers are invoked from an application by calling one of the `Output()` functions defined on `CORBA::ORB`, for example:

```
// C++
CORBA::ORB::Output("Error: client exiting...", 2);
```

Orbix

```
// C++
class UserOutput {
public:
   UserOutput(const char* identifier);
   virtual ~UserOutput();
   virtual void Output(const char* message, int i = 1) = 0;
};
```

Notes

Orbix specific.

See Also

`CORBA::ORB::ActivateOutputHandler()`
`CORBA::ORB::DeactivateOutputHandler()`
`CORBA::ORB::setDiagnostics()`
`CORBA::ORB::Output(char*, int level)`
`CORBA::ORB::Output(Environment&, int level)`
`CORBA::ORB::Output(SystemException*, int level)`

CORBA::UserOutput::UserOutput()

Synopsis
```
UserOutput(const char* identifier);
```

Description Constructor.

Parameters

`identifier`	The name of this output handler.

Notes Orbix specific.

CORBA::UserOutput::~UserOutput()

Synopsis
```
virtual ~UserOutput();
```

Description Destructor.

Notes Orbix specific.

CORBA::UserOutput::Output()

Synopsis
```
virtual void Output(const char* message,
   int level = 1) = 0;
```

Description A derived class may redefine this function to direct diagnostic messages to a location other than the default cout stream.

Parameters

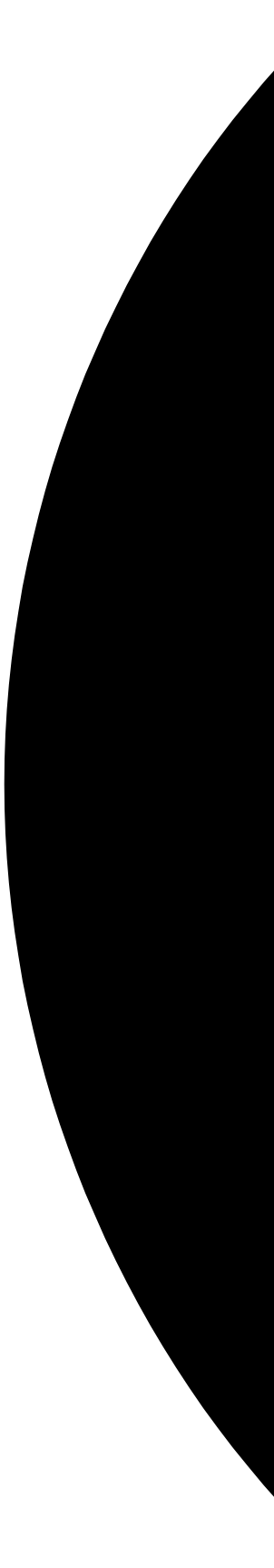
`message`	The message to be output.
`level`	The diagnostic level for this message. (All Orbix diagnostic messages are level 1.)

Notes Orbix specific.

See Also `CORBA::ORB::setDiagostics()`

Part II

IDL Interface to the Interface Repository



Common CORBA Data Types

CORBA::DefinitionKind

Synopsis

```
enum DefinitionKind {
   dk_none, dk_all,
   dk_Attribute, dk_Constant, dk_Exception, dk_Interface,
   dk_Module, dk_Operation, dk_Typedef,
   dk_Alias, dk_Struct, dk_Union, dk_Enum,
   dk_Primitive, dk_String, dk_Sequence, dk_Array,
   dk_Repository};
```

Description Each IFR object has an attribute (`def_kind`) of type `DefinitionKind` that records the kind of the IFR object. For example, the `def_kind` attribute of an `InterfaceDef` object are `dk_interface`. The enumeration constants `dk_none` and `dk_all` have special meanings when searching for an object in a repository.

Notes CORBA compliant.

CORBA::Identifier

Synopsis

```
typedef string Identifier;
```

Description A simple name that identifies modules, interfaces, constants, typedefs, exceptions, attributes, and operations. An identifier is not necessarily unique within the entire Interface Repository; it is unique only within a particular `Repository`, `ModuleDef`, `InterfaceDef`, or `OperationDef`.

Notes CORBA compliant.

CORBA::RepositoryId

Synopsis `typedef string RepositoryId;`

Description A string that uniquely identifies a module, interface, constant, typedef, exception, attribute, or operation.

Notes CORBA compliant.

CORBA::ScopedName

Synopsis `typedef string ScopedName;`

Description A `ScopedName` gives an entity's name relative to a scope. A `ScopedName` that begins with "`::`" is an *absolute scoped name*; one that uniquely identifies an entity within a repository. An example might be:

```
::Account::makeWithdrawal.
```

A `ScopedName` that does not begin with "`::`" is a relative scoped name; one that identifies an entity relative to some other entity. For example:

```
makeWithdrawal
```

This is within the entity with the absolute scoped name `::Account`.

Notes CORBA compliant.

CORBA::AliasDef

Synopsis The interface `AliasDef` describes an IDL typedef that aliases another definition. It is used to represent an IDL `typedef`.

CORBA

```
// IDL
// In module CORBA.

interface AliasDef : TypedefDef {
   attribute IDLType original_type_def;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`
`CORBA::Container::create_alias()`

AliasDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The DefinitionKind for the kind member is dk_Alias. The value member is an any whose TypeCode is _tc_AliasDescription and whose value is a structure of type TypeDescription:

```
// IDL
struct TypeDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
};
```

See Also CORBA::TypedefDef::describe()

AliasDef::original_type_def

Synopsis

```
attribute IDLType original_type_def;
```

Description Identifies the type being aliased.

Modifying the original_type_def attribute automatically updates the type attribute (the type attribute is inherited from TypedefDef which in turn inherits it from IDLType). Both attributes contain the same information.

Notes CORBA compliant.

See Also CORBA::IDLType::type

CORBA::ArrayDef

Synopsis The interface `ArrayDef` represents a one-dimensional array. A multi-dimensional array is represented by an `ArrayDef` with an element type that is another array definition. The final element type represents the type of element contained in the array. You can create an instance of interface `ArrayDef` using `CORBA::Repository::create_array()`.

CORBA

```
// IDL
// In module CORBA

interface ArrayDef : IDLType {
   attribute unsigned long length;
   readonly attribute TypeCode element_type;
   attribute IDLType element_type_def;
};
```

Notes CORBA compliant.

See Also `CORBA::IDLType`
`CORBA::ArrayDef::element_type_def`
`CORBA::Repository::create_array()`

ArrayDef::element_type

Synopsis

```
readonly attribute TypeCode element_type;
```

Description Identifies the type of the element contained in the array. This contains the same information as in the attribute `element_type_def`.

Notes CORBA compliant.

See Also `CORBA::ArrayDef::element_type_def`

ArrayDef::element_type_def

Synopsis `attribute IDLType element_type_def;`

Description Describes the type of the element contained within the array. This contains the same information as in the attribute `element_type_def`.

The type of elements contained in the array can be changed by changing this attribute. Changing this attribute also changes the `element_type` attribute.

Notes CORBA compliant.

See Also `CORBA::ArrayDef::element_type`

ArrayDef::length

Synopsis `attribute unsigned long length;`

Description Specifies the number of elements in the array.

Notes CORBA compliant.

CORBA::AttributeDef

Synopsis Interface `AttributeDef` describes an IDL attribute.

CORBA

```
// IDL
// In module CORBA.
enum AttributeMode { ATTR_NORMAL, ATTR_READONLY };

interface AttributeDef : Contained {
   readonly attribute TypeCode type;
   attribute IDLType type_def;
   attribute AttributeMode mode;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`
`CORBA::InterfaceDef::create_attribute()`

AttributeDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The `DefinitionKind` for the `kind` member is `dk_Attribute`. The value member is an `any` whose `TypeCode` is `_tc_AttributeDescription`.

The value is a structure of type AttributeDescription:

```
// IDL
// In module CORBA.
struct AttributeDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
   AttributeMode mode;
};
```

See Also CORBA::Contained::describe()

AttributeDef::mode

Synopsis `attribute AttributeMode mode;`

Description Specifies whether the attribute is read/write (ATTR_NORMAL) or read-only (ATTR_READONLY).

Notes CORBA compliant.

AttributeDef::type

Synopsis `readonly attribute TypeCode type;`

Description Identifies the type of this attribute. The same information is contained in the type_def attribute.

Notes CORBA compliant.

See Also CORBA::TypeCode
CORBA::AttributeDef::type_def

AttributeDef::type_def

Synopsis `attribute IDLType type_def;`

Description Describes the type for this attribute. The same information is contained in the `type` attribute. Changing the `type_def` attribute automatically changes the `type` attribute.

Notes CORBA compliant.

See Also `CORBA::IDLType`
`CORBA::AttributeDef::type`

CORBA::ConstantDef

Synopsis Interface `ConstantDef` describes an IDL constant. The name of the constant is inherited from `Contained`.

CORBA

```
// IDL
// in module CORBA.

interface ConstantDef : Contained {
   readonly attribute TypeCode type;
   attribute IDLType type_def;
   attribute any value;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`
`CORBA::Container::create_constant()`

ConstantDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The `DefinitionKind` for the `kind` member is `dk_Constant`.

The value member is an any whose TypeCode is _tc_ConstantDescription and whose value is a structure of type ConstantDescription:

```
// IDL
struct ConstantDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
   any value;
};
```

Notes CORBA compliant.

See Also CORBA::Contained::describe()

ConstantDef::type

Synopsis
```
readonly attribute TypeCode type;
```

Description Identifies the type of this constant. The type must be a TypeCode for one of the simple types (such as long, short, float, char, string, double, boolean, unsigned long, and unsigned short). The same information is contained in the type_def attribute.

Notes CORBA compliant.

See Also CORBA::ConstantDef::type_def

ConstantDef::type_def

Synopsis
```
attribute IDLType type_def;
```

Description Identifies the type of the constant. The same information is contained in the type attribute.

The type of a constant can be changed by changing its type_def attribute. This also changes its type attribute.

Notes CORBA compliant.

See Also CORBA::ConstantDef::type

ConstantDef::value

Synopsis `attribute any value;`

Description Contains the value for this constant. When changing the `value` attribute, the `TypeCode` of the `any` must be the same as the `type` attribute.

Notes CORBA compliant.

See Also `CORBA::TypeCode`

CORBA::Contained

Synopsis

Interface `Contained` is an abstract interface describing Interface Repository objects that can be contained in a module, interface, or repository. It is a base interface for the following interfaces:

```
ModuleDef
InterfaceDef
ConstantDef
TypedefDef
ExceptionDef
AttributeDef
OperationDef
StructDef
EnumDef
UnionDef
AliasDef
```

CORBA

```
// IDL
// In module CORBA.

typedef string VersionSpec;

interface Contained : IRObject {
   attribute RepositoryId id;
   attribute Identifier name;
   attribute VersionSpec version;

   readonly attribute Container defined_in;
   readonly attribute ScopedName absolute_name;
   readonly attribute Repository containing_repository;

   struct Description {
      DefinitionKind kind;
      any value;
   };
   Description describe();
```

```
   void move (
      in Container new_container,
      in Identifier new_name,
      in VersionSpec new_version);
};
```

Notes CORBA compliant.

See Also `CORBA::Container`
`CORBA::IRObject`

Contained::absolute_name()

Synopsis `readonly attribute ScopedName absolute_name;`

Description Gives the absolute scoped name of an object.

Notes CORBA compliant.

See Also `CORBA::ScopedName`

Contained::containing_repository()

Synopsis `readonly attribute Repository containing_repository;`

Description Gives the `Repository` within which the object is contained.

Notes CORBA compliant.

Contained::defined_in

Synopsis `attribute Container defined_in;`

Description Specifies the Repository ID for the Interface Repository object in which the object is contained.

An IFR object is said to be contained by the IFR object in which it is defined. For example, an `InterfaceDef` object is contained by the `ModuleDef` in which it is defined.

A second notion of Contained applies to objects of type AttributeDef or OperationDef. These objects may also be said to be contained in an InterfaceDef object if they are inherited into that interface.

Note: Inheritance of operations and attributes across the boundaries of different modules is also allowed.

Notes CORBA compliant.

See Also CORBA::Container::contents()

Contained::describe()

Synopsis

```
Description describe();
```

Description Returns a structure of type Contained::Description:

```
// IDL
struct Description {
   DefinitionKind kind
   any value;
};
```

This is a generic form of description that is used as a wrapper for another structure stored in the value field. Depending on the type of the Contained object, the value field contains a corresponding description structure:

```
ConstantDescription
ExceptionDescription
AttributeDescription
OperationDescription
ModuleDescription
InterfaceDescription
TypeDescription
```

The last of these, TypeDescription is used for objects of type StructDef, UnionDef, EnumDef, and AliasDef (it is associated with interface TypedefDef from which these four listed interfaces inherit).

The kind field contains the same value as the def_kind attribute that Contained inherits from IRObject.

Notes CORBA compliant.

See Also `CORBA::Container::describe_contents()`
`CORBA::DefinitionKind`

Contained::id

Synopsis

```
attribute RepositoryId id;
```

Description A `RepositoryId` provides an alternative method of naming an object which is independent of the `ScopedName`. In order to be CORBA compliant the naming conventions specified for CORBA `RepositoryIds` should be followed. Changing the `id` attribute changes the global identity of the contained object. It is an error to change the `id` to a value that currently exists in the contained object's `Repository`.

Notes CORBA compliant.

Contained::move ()

Synopsis

```
void move(in Container new_container,
   in Identifier new_name, in VersionSpec new_version);
```

Description Removes this object from it's container, and adds it to the container specified by `new_container`. The new container must:

- Be in the same repository.
- Be capable of containing an object of this type.
- Not contain an object of the same name (unless multiple versions are supported).

The `name` attribute of the object being moved is changed to that specified by the `new_name` parameter. The `version` attribute is changed to that specified by the `new_version` parameter.

Notes CORBA compliant.

See Also `CORBA::Container`

Contained::name

Synopsis `attribute Identifier name;`

Description The name of the object within its scope. For example, in the following definition:

```
// IDL
interface Example {
   void op();
};
```

the names are `Example` and `op`. A `name` must be unique within its scope but is not necessarily unique within an Interface Repository. You can change the `name` attribute but it is an error to change it to a value that is currently in use within the object's `Container`.

Notes CORBA compliant.

See Also `Contained::id`

Contained::version

Synopsis `attribute VersionSpec version;`

Description The version number for this object. Each interface object is identified by a version which distinguishes it from other versioned objects of the same name.

Notes CORBA compliant.

CORBA::Container

Synopsis Interface `Container` describes objects that can contain other objects. Such objects are:

```
Repository
ModuleDef
InterfaceDef
```

CORBA

```
// IDL
// In module CORBA.

typedef sequence <Contained> ContainerSeq;

interface Container : IRObject {

   Contained lookup(in ScopedName search_name);

   ContainedSeq contents(
      in DefinitionKind limit_type,
      in boolean exclude_inherited);

   ContainedSeq lookup_name(
      in Identifier search_name,
      in long levels_to_search,
      in DefinitionKind limit_type,
      in boolean exclude_inherited);

   struct Description {
      Contained contained_object;
      DefinitionKind kind;
      any value;
   };

   typedef sequence<Description> DescriptionSeq;

   DescriptionSeq describe_contents(
      in DefinitionKind limit_type,
      in boolean exclude_inherited,
      in long max_returned_objs);
```

```
ModuleDef create_module(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version
);
ConstantDef create_constant(
   in RepositoryId id,

   in Identifier name,
   in VersionSpec version,
   in IDLType type,
   in any value);

StructDef create_struct(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in StructMemberSeq members);

UnionDef create_union(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in IDLType discriminator_type,
   in UnionMemberSeq members);

EnumDef create_enum(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in EnumMemberSeq members);

AliasDef create_alias(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in IDLType original_type);

InterfaceDef create_interface(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in InterfaceDefSeq base_interfaces);
```

```
   ExceptionDef create_exception(
      in RepositoryId id;
      in Identifier name,
      in VersionSpec version,
      in StructMemberSeq members);
};
```

Notes CORBA compliant.

See Also `CORBA::IRObject`

Container::contents()

Synopsis

```
ContainedSeq contents(in DefinitionKind limit_type,
   in boolean exclude_inherited);
```

Description Returns a sequence of `Contained` objects that are directly contained in (defined in or inherited into) the target object. You can use this operation to navigate through the hierarchy of definitions—starting, for example, at a `Repository`.

Parameters

`limit_type`	If set to `dk_all`, all contained Interface Repository objects are returned. If set to the `DefinitionKind` for a specific interface type, it returns only interfaces of that type. For example, if set to, `dk_Operation`, it returns contained operations only.
`exclude_inherited`	Applies only to interfaces. If set to `TRUE`, inherited objects are not returned. If set to `FALSE`, objects are returned even if they are inherited.

Notes CORBA compliant.

See Also `CORBA::Container::describe_contents()`
`CORBA::DefinitionKind`

Container::create_alias()

Synopsis

```
UnionDef create_alias(in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in IDLType original_type);
```

Description Creates a new `AliasDef` object within the target `Container`. The `defined_in` attribute is set to the target `Container`. The `containing_repository` attribute is set to the `Repository` in which the new `AliasDef` object is defined.

Parameters

`id`	The Repository ID for the new `AliasDef` object. An error is returned if an Interface Repository object with the same `id` already exists within the object's Repository.
`name`	The name for the new `AliasDef` object. You cannot specify a name that already exists within the object's `Container` when multiple versions are not supported.
`version`	A version for the new `AliasDef`.
`original_type`	The original type that is being aliased.

Notes CORBA compliant.

See Also `CORBA::AliasDef`

Container::create_constant()

Synopsis

```
ConstantDef create_constant(in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in IDLType type,
   in any value);
```

Description Creates a `ConstantDef` object within the target `Container`. The `defined_in` attribute is set to the target `Container`. The `containing_repository` attribute is set to the `Repository` in which the new `ConstantDef` object is defined.

Parameters

`id`	The Repository ID of the new `ConstantDef` object. You cannot specify an `id` that already exists within the object's Repository.
`name`	The name of the new `ConstantDef` object. You cannot specify a `name` that already exists within the object's `Container` when multiple versions are not supported.
`version`	The version number of the new `ConstantDef` object.
`type`	The type of the defined constant. This must be one of the simple types (`long`, `short`, `ulong`, `ushort`, `float`, `double`, `char`, `string`, `boolean`).
`value`	The value of the defined constant.

Notes CORBA compliant.

See Also `CORBA::ConstantDef`

Container::create_enum()

Synopsis

```
EnumDef create_enum(in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in EnumMemberSeq members);
```

Description Creates a new `EnumDef` object within the target `Container`. The `defined_in` attribute is set to `Container`. The `containing_repository` attribute is set to the `Repository` in which the new `EnumDef` object is defined.

Parameters

`id`	The Repository ID of the new `EnumDef` object. You cannot specify an `id` that already exists within the Repository.
`name`	The name of the `EnumDef` object. You cannot specify a name that already exists within the object's `Container` when multiple versions are not supported.
`version`	The version number of the new `EnumDef` object.
`members`	A sequence of `EnumMember` structures that describe each member of the new `EnumDef` object.

Notes CORBA compliant.

See Also `CORBA::EnumDef`

Container::create_exception()

Synopsis

```
ExceptionDef create_exception(in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in StructMemberSeq members);
```

Description Creates a new `ExceptionDef` object within the target `Container`. The `defined_in` attribute is set to `Container`. The `containing_repository` attribute is set to the `Repository` in which new `ExceptionDef` object is defined. The `type` attribute of the `StructMember` structures is ignored and should be set to `_tc_void`.

Parameters

`id`	The Repository ID of the new `ExceptionDef` object. You cannot specify an `id` that already exists within the object's Repository.
`name`	The name of the new `ExceptionDef` object. You cannot specify a name that already exists within the object's `Container` when multiple versions are not supported.
`version`	A version number for the new `ExceptionDef` object.
`members`	A sequence of `StructMember` structures that describe each member of the new `ExceptionDef` object.

Notes CORBA compliant.

See Also `CORBA::ExceptionDef`

Container::create_interface()

Synopsis

```
InterfaceDef create_interface(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in InterfaceDefSeq base_interfaces);
```

Description Creates a new empty `InterfaceDef` object within the target Container. The `defined_in` attribute is set to `Container`. The `containing_repository` attribute is set to the Repository in which the new `InterfaceDef` object is defined.

Parameters

`id`	The Repository ID of the new `InterfaceDef` object. You cannot specify an `id` that already exists within the object's Repository.
`name`	The name of the new `InterfaceDef` object. You cannot specify a name that already exists within the object's `Container` when multiple versions are not supported.
`version`	A version for the new `InterfaceDef` object.
`base_interfaces`	A sequence of `InterfaceDef` objects from which the new interface inherits.

Notes CORBA compliant.

See Also `CORBA::InterfaceDef`

Container::create_module()

Synopsis

```
ModuleDef create_module(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version);
```

Description Creates an empty `ModuleDef` object within the target `Container`. The `defined_in` attribute is set to `Container`. The `containing_repository` attribute is set to the Repository in which the newly created `ModuleDef` object is defined.

Parameters

`id`	The Repository ID of the new `ModuleDef` object. You cannot specify an `id` that already exists within the object's Repository.
`name`	The name of the new `ModuleDef` object. You cannot specify a name that already exists within the object's `Container` when multiple versions are not supported.
`version`	A version for the `ModuleDef` object to be created.

Notes CORBA compliant.

Container::create_struct()

Synopsis

```
StructDef create_struct(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in StructMemberSeq members);
```

Description Creates a new `StructDef` object within the target `Container`. The `defined_in` attribute is set to `Container`. The `containing_repository` attribute is set to the Repository in which the new `StructDef` object is defined. The `type` attribute of the `StructMember` structures is ignored and should be set to `_tc_void`.

Parameters

`id`	The Repository ID of the new `StructDef` object. You cannot specify an `id` that already exists within the object's Repository.
`name`	The name of the new `StructDef` object. You cannot specify a name that already exists within the object's `Container` when multiple versions are not supported.
`version`	A version for the new `StructDef` object.
`members`	A sequence of `StructMember` structures that describe each member of the new `StructDef` object.

Notes CORBA compliant.

See Also `CORBA::StructDef`

Container::create_union()

Synopsis

```
UnionDef create_union(
   in RepositoryId id,
   in Identifier name,
   in VersionSpec version,
   in IDLType discriminator_type,
   in UnionMemberSeq members);
```

Description Creates a new `UnionDef` object within the target `Container`. The `defined_in` attribute is set to the target `Container`. The `containing_repository` attribute is set to the Repository in which the new `UnionDef` object is defined. The type attribute of the `UnionMember` structures is ignored and should be set to `_tc_void`.

Parameters

`id`	The Repository ID of the new `UnionDef` object. You cannot specify an `id` that already exists within the object's Repository.
`name`	The name of the new `UnionDef` object. You cannot specify a name that already exists within the object's `Container` when multiple versions are not supported.
`version`	A version for the new `UnionDef` object.
`discriminator_type`	The type of the Union discriminator.
`members`	A sequence of `UnionMember` structures that describe each member of the new `UnionDef` object.

Notes CORBA compliant.

See Also `CORBA::UnionDef`

Container::describe_contents()

Synopsis

```
DescriptionSeq describe_contents(
   in DefinitionKind limit_type,
   in boolean exclude_inherited,
   in long max_returned_objs);
```

Description A combination of the operation `Contained::describe()` and the operation `Container::contents()`, the `describe_contents()` operation returns a sequence of structures of type `Container::Description`:

```
// IDL
struct Description {
   Contained contained_object;
   DefinitionKind kind;
   any value;
};
```

Each of these structures gives the object reference of a contained object, together with its `kind` and `value`.

Parameters

Notes CORBA compliant.

See Also `CORBA::Container::contents()`
`CORBA::Contained::describe()`

Container::lookup()

Synopsis

```
Contained lookup(in ScopedName search_name);
```

Description Locates an object name within the target container. The objects can be directly or indirectly defined in or inherited into the target container.

Parameters

`search_name`	The `name` of the object to search for relative to the target container. If a relative name is given, the object is looked up relative to the target container. If `search_name` is an absolute scoped name (prefixed by '::'), the object is located relative to the containing `Repository`.

Notes CORBA compliant

See Also `CORBA::Container::lookup_name()`
`CORBA::ScopedName`

Container::lookup_name()

Synopsis

```
ContainedSeq lookup_name(
   in Identifier search_name,
   in long levels_to_search,
   in DefinitionKind limit_type,
   in boolean exclude_inherited);
```

Description Locates an object or objects by name within the target container. The named objects can be directly or indirectly defined in or inherited into the target container.

Parameters

`search_name`	The simple name of the object to search for. The use of the wildcard character "`*`" is also allowed (Orbix specific).
`levels_to_search`	Defines whether the search is confined to the current object or should include all Interface Repository objects contained by the object. If set to `-1`, the current object and all contained Interface Repository objects are searched. If set to `1`, only the current object is searched.
`limit_type`	If this is set to `dk_all`, all the contained Interface Repository objects are returned. If set to the `DefinitionKind` for a particular Interface Repository kind, it returns only objects of that kind. For example, if set to `dk_Operation`, it returns contained operations only.
`exclude_inherited`	Applies only to interfaces. If set to `TRUE`, inherited objects are not returned. If set to `FALSE`, objects are returned even if they are inherited.

Return Value Returns a sequence of contained objects. (More than one object, having the same simple name can exist within a nested scope structure.)

Notes CORBA compliant.

See Also `CORBA::DefinitionKind`

CORBA::EnumDef

Synopsis Interface `EnumDef` describes an IDL enumeration definition.

CORBA

```
// IDL
// In module CORBA.

typedef sequence <Identifier> EnumMemberSeq;

interface EnumDef : TypedefDef {
   attribute EnumMemberSeq members;
};
```

Notes CORBA compliant.

See Also `CORBA::TypedefDef`

EnumDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The `DefinitionKind` for the `kind` member is `dk_Enum`. The value member is an any whose `TypeCode` is `_tc_TypeDescription` and whose value is a structure of type `TypeDescription`:

```
// IDL
struct TypeDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
};
```

The `type` field of the `struct` gives the `TypeCode` of the defined `Enum`.

See Also `CORBA::TypedefDef::describe()`

EnumDef::members

Synopsis

```
attribute EnumMemberSeq members;
```

Description Contains the enumeration's list of identifiers (its enumerated constants).

The set of enumerated constants can be changed by changing this attribute.

Notes CORBA compliant.

See Also `CORBA::Identifier`

CORBA::ExceptionDef

Synopsis Interface `ExceptionDef` describes an IDL exception. It inherits from interface `Contained`.

CORBA

```
// IDL
// In module CORBA.
struct StructMember {
   Identifier name;
   TypeCode type;
   IDLType type_def;
};
typedef sequence <StructMember> StructMemberSeq;

interface ExceptionDef : Contained {
   readonly attribute TypeCode type;
   attribute StructMemberSeq members;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`

ExceptionDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The DefinitionKind for the kind member is dk_Exception. The value member is an any whose TypeCode is _tc_ExceptionDescription and whose value is a structure of type ExceptionDescription:

```
// IDL
struct ExceptionDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
};
```

The type field of the struct gives the TypeCode of the defined exception.

Notes CORBA compliant.

See Also CORBA::Contained::describe()
CORBA::TypeCode

ExceptionDef::members

Synopsis

```
attribute StructMemberSeq members;
```

Description In a sequence of StructMember structures, the members attribute describes the exception's members.

You can modify the members attribute to change the structure's members. You should set only the name and type_def fields of each StructMember (set the type field to _tc_void, and it is set automatically to the TypeCode of the type_def field).

Notes CORBA compliant.

See Also CORBA::StructDef
CORBA::ExceptionDef::type

ExceptionDef::type

Synopsis `readonly attribute TypeCode type;`

Description The type of the exception (from which you can understand the definition of the exception). The `TypeCode` kind for an exception is `tk_except`.

Notes CORBA compliant.

See Also `CORBA::TypeCode`
`CORBA::ExceptionDef::members`

CORBA::IDLType

Synopsis The abstract interface `IDLType` describes Interface Repository objects that represent interfaces, type definitions, structures, unions, enumerations, aliases (that is, IDL typedef), primitives, bounded strings, sequences, and array types. Thus, it is a base interface for the following interfaces:

```
ArrayDef
InterfaceDef
PrimitiveDef
StringDef
SequenceDef
TypedefDef
AliasDef
StructDef
UnionDef
EnumDef
```

CORBA

```
// IDL
// In module CORBA.
interface IDLType : IRObject {
   readonly attribute TypeCode type;
};
```

Notes CORBA compliant.

See Also `CORBA::IRObject`

`CORBA::TypeCode`

IDLType::type

Synopsis

```
readonly attribute TypeCode type;
```

Description Encodes the type information of an Interface Repository object. You can also extract most type information using operations and attributes defined on derived types of IDLType.

Notes CORBA compliant.

See Also `CORBA::TypeCode`

CORBA::IRObject

Synopsis The interface `IRObject` provides a base interface from which all interface repository interfaces are derived.

CORBA

```
// IDL
// In module CORBA.

interface IRObject {
   readonly attribute DefinitionKind def_kind;
   void destroy ();
};
```

Notes CORBA compliant.

See Also `CORBA::DefinitionKind`

IRObject::def_kind

Synopsis `readonly attribute DefinitionKind def_kind`

Description Identifies the kind of an IFR object. For example, an `OperationDef` object, describing an IDL operation, has the kind `dk_Operation`.

Notes CORBA compliant.

See Also `CORBA::DefinitionKind`

IRObject::destroy()

Synopsis `void destroy();`

Description Deletes an IFR object. This also deletes any objects contained within the target object. You cannot invoke the `destroy()` operation on a `Repository` or on a `PrimitiveDef` object.

Notes CORBA compliant.

CORBA::IT_Repository

Synopsis The interface `IT_Repository` provides transactional access to the Interface Repository. These operations can be used to help ensure that the repository is left in a consistent state. In the present implementation only one transaction may be active at a time.

CORBA

```
// IDL
// In module CORBA.

interface IT_Repository : Repository {
   unsigned long start();
   void commit(in unsigned long transaction_id);
   void rollBack(in unsigned long transaction_id);
   typedef sequence <unsigned long> transactions;
   transactions active_transactions();
};
```

Notes Orbix specific.

See Also `CORBA::Container`
`CORBA::Repository`

IT_Repository::start()

Synopsis `unsigned long start();`

Description Starts a new transaction.

Return Value Returns a transaction identifier for the transaction started or `0` if the transaction could not be started.

Notes Orbix specific.

IT_Repository::commit()

Synopsis `void commit(in unsigned long transaction_id);`

Description Commits a transaction.

Parameters

`transaction_id`	The identifier for the transaction.

Notes Orbix specific.

See Also `CORBA::IT_Repository::start()`

IT_Repository::rollBack()

Synopsis `void rollBack(in unsigned long transaction_id);`

Description Rolls back all changes made during the transaction to the previous commit point.

Parameters

`transaction_id`	The identifier for the transaction to be rolled back.

Notes Orbix specific.

See Also `CORBA::IT_Repository::commit()`

IT_Repository::active_transactions()

Synopsis `transactions active_transactions();`

Description Returns a sequence of active `transaction_id`s. If no transaction is active, an empty sequence is returned.

Notes Orbix specific.

CORBA::ModuleDef

Synopsis The interface `ModuleDef` describes an IDL module. It inherits from the interfaces `Container` and `Contained`.

CORBA

```
// IDL
// In module CORBA.
interface ModuleDef : Container, Contained {
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`

`CORBA::Container`

ModuleDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The `DefinitionKind` for the `kind` member is `dk_Module`. The value member is an any whose TypeCode is `_tc_ModuleDescription` and whose value is a structure of type `ModuleDescription`:

```
struct ModuleDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained::describe()`

CORBA::OperationDef

Synopsis Interface `OperationDef` describes an IDL operation that is defined in an IDL interface.

One use of `OperationDef` is to construct an `NVList` for a specific operation for use in the Dynamic Invocation Interface. See `CORBA::ORB::create_operation_list()` for details.

CORBA

```
// IDL
// In module CORBA.

enum OperationMode { OP_NORMAL, OP_ONEWAY };

enum ParameterMode { PARAM_IN, PARAM_OUT, PARAM_INOUT };

struct ParameterDescription {
   Identifier name;
   TypeCode type;
   IDLType type_def;
   ParameterMode mode;
};

typedef sequence <ParameterDescription> ParDescriptionSeq;

typedef Identifier ContextIdentifier;
typedef sequence <ContextIdentifier> ContextIdSeq;

typedef sequence <ExceptionDescription> ExcDescriptionSeq;

interface OperationDef : Contained {
   readonly attribute TypeCode result;
   attribute IDLType result_def;
   attribute ParDescriptionSeq params;
   attribute OperationMode mode;
   attribute ContextIdSeq contexts;
   attribute ExceptionDefSeq exceptions;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`
`CORBA::ORB::create_operation_list()`
`CORBA::ExceptionDef`

OperationDef::contexts

Synopsis `attribute ContextIdSeq contexts;`

Description The list of context identifiers specified in the context clause of the operation.

Notes CORBA compliant.

OperationDef::exceptions

Synopsis `attribute ExceptionDefSeq`

Description The list of exceptions that the operation can raise.

Notes CORBA compliant.

See Also `CORBA::ExceptionDef`

OperationDef::describe()

Synopsis `Description describe();`

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The `DefinitionKind` for the `kind` member is `dk_Operation`. The value member is an `any` whose `TypeCode` is `_tc_OperationDescription` and whose value is a structure of type `OperationDescription`:

```
struct OperationDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode result;
   OperationMode mode;
   ContextIdSeq contexts;
   ParDescriptionSeq parameters;
   ExcDescriptionSeq exceptions;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained::describe()`
`CORBA::ExceptionDef`

OperationDef::mode

Synopsis `attribute OperationMode mode;`

Description Specifies whether the operation is normal (`OP_NORMAL`) or oneway (`OP_ONEWAY`). The `mode` attribute can only be set to `OP_ONEWAY` if the `result` is `_tc_void` and all parameters have a `mode` of `PARAM_IN`.

Notes CORBA compliant.

OperationDef::params

Synopsis `attribute ParDescriptionSeq params;`

Description Specifies the parameters for this operation. It is a sequence of structures of type `ParameterDescription`:

```
struct ParameterDescription {
   Identifier name;
   TypeCode type;
   IDLType type_def;
   ParameterMode mode;
};
```

The name member provides the name for the parameter. The type member identifies the TypeCode for the parameter. The type_def member identifies the definition of the type for the parameter. The mode specifies whether the parameter is an in (PARAM_IN), an out (PARAM_OUT) or an inout (PARAM_INOUT) parameter. The order of the ParameterDescriptions is significant.

Notes CORBA compliant.

See Also CORBA::TypeCode
CORBA::IDLType

OperationDef::result

Synopsis

```
readonly attribute TypeCode result;
```

Description The return type of this operation. The attribute result_def contains the same information.

Notes CORBA compliant.

See Also CORBA::TypeCode
CORBA::OperationDef::result_def

OperationDef::result_def

Synopsis

```
attribute IDLType result_def;
```

Description Describes the return type for this operation. The attribute result_def contains the same information.

Setting the result_def attribute also updates the result attribute.

Notes CORBA compliant.

See Also CORBA::IDLType
CORBA::OperationDef::result

CORBA::PrimitiveDef

Synopsis Interface `PrimitiveDef` represents a primitive type such as `short` or `long`. `PrimitiveDef` objects are anonymous (unnamed) and owned by the Repository.

Objects of type `PrimitiveDef` cannot be created. When needed, you can obtain a reference to a `PrimitiveDef` through a call to the operation `CORBA::Repository::get_primitive()`.

```
// IDL
// In module CORBA.

enum PrimitiveKind {
   pk_null, pk_void, pk_short, pk_long, pk_ushort, pk_ulong,
   pk_float, pk_double, pk_boolean, pk_char, pk_octet,
   pk_any, pk_TypeCode, pk_Principal, pk_string, pk_objref
};

interface PrimitiveDef : IDLType {
   readonly attribute PrimitiveKind kind;
};
```

Notes CORBA compliant.

See Also `CORBA::IDLType`

PrimitiveDef::kind

Synopsis `readonly attribute PrimitiveKind kind;`

Description Identifies which of the primitive types is represented by this `PrimitiveDef`. A `PrimitiveDef` with a `kind` of type `pk_string` represents an unbounded string, a bounded string is represented by the interface `StringDef`. A `PrimitiveDef` with a `kind` of type `pk_objref` represents the IDL type `Object`.

Notes CORBA compliant.

See Also
`CORBA::IDLType`
`CORBA::Object`
`CORBA::StringDef`

CORBA::Repository

Synopsis The Interface Repository itself is a container for IDL type definitions. Its interface is described by the `Repository` interface. You can use it to look up any definition, by either name or identity, that is defined in the global name space or within an interface or module.

CORBA

```
// IDL
// In module CORBA.

interface Repository : Container {
   Contained lookup_id(
      in RepositoryId search_id);

   PrimitiveDef get_primitive (in PrimitiveKind kind);

   StringDef create_string (in unsigned long bound);

   SequenceDef create_sequence (
      in unsigned long bound,
      in IDLType element_type);

   ArrayDef create_array (
      in unsigned long length,
      in IDLType element_type);
};
```

Notes CORBA compliant.

See Also `CORBA::Container`

Repository::create_array()

Synopsis

```
ArrayDef create_array(in unsigned long length,
   in IDLType element_type);
```

Description Returns a new array object defining an anonymous (unnamed) type. The new array object must be used in the definition of exactly one other object; it is deleted when the object it is contained in is deleted. It is the application's responsibility to delete any anonymous type object it creates if subsequently that object is not successfully used in the definition of a `Contained` object.

Parameters

`length`	The number of elements in the array.
`element_type`	The type of element that the array contains.

Notes CORBA compliant.

See Also `CORBA::ArrayDef`
`CORBA::IRObject`

Repository::create_sequence()

Synopsis

```
SequenceDef create_sequence (in unsigned long bound,
   in IDLType element_type);
```

Description Returns a new sequence object defining an anonymous (unnamed) type. The new sequence object must be used in the definition of exactly one other object; it is deleted when the object it is contained in is deleted. It is the application's responsibility to delete any anonymous type object it creates if subsequently that object is not successfully used in the definition of a `Contained` object.

Parameters

`bound`	The number of elements in the sequence. A `bound` of `0` indicates an unbounded sequence.
`element_type`	The type of element that the sequence contains.

Notes CORBA compliant.

See Also `CORBA::SequenceDef`

Repository::create_string()

Synopsis

```
StringDef create_string (in unsigned long bound);
```

Description Returns a new string object defining an anonymous (unnamed) type. The new string object must be used in the definition of exactly one other object; it is deleted when the object it is contained in is deleted. It is the application's responsibility to delete any anonymous type object it creates if subsequently that object is not successfully used in the definition of a `Contained` object.

Parameters

bound	The maximum number of characters in the string. This cannot be `0`.

Notes CORBA compliant.

See Also `CORBA::StringDef`

Repository::get_primitive()

Synopsis

```
PrimitiveDef get_primitive(in PrimitiveKind kind);
```

Description Returns a reference to a `PrimitiveDef` of the specified `PrimitiveKind`. All `PrimitiveDefs` are owned by the `Repository`, one primitive object per primitive type (for example, `short`, `long`, `unsigned short`, `unsigned long` and so on).

Notes CORBA compliant.

See Also `CORBA::PrimitiveDef`

Repository::describe_contents()

Synopsis

```
sequence<Description> describe_contents (
      in InterfaceName restrict_type,
      in boolean  exclude_inherited,
      in long  max_returned_objs);
```

Description The operation `describe_contents()` is inherited from interface `Container`. It returns a sequence of `Container::Description` structures; one such structure for each top level item in the repository. The structure is defined as:

```
// IDL
struct Description {
   Contained contained_object;
   DefinitionKind kind;
   any value;
};
```

Each structure has the following members:

`contained_object`	The object reference, of type `Contained`, of the contained top-level object. You can call the `describe()` function on an object reference, of type `Contained`, to get further information on a top level object in the Repository.
`kind`	The kind of the object being described.

`value`	An `any` that may contain one of the following `structs`:
	`ModuleDescription`
	`ConstantDescription`
	`TypeDescription`
	`ExceptionDescription`
	`AttributeDescription`
	`ParameterDescription`
	`OperationDescription`
	`InterfaceDescription`

Notes CORBA compliant.

See Also `Container::describe_contents()`
`DefinitionKind`

Repository::lookup_id()

Synopsis `Contained lookup_id(in RepositoryId search_id);`

Description Returns an object contained within the Repository given its `RepositoryId`.

Notes CORBA compliant.

See Also `Contained`

CORBA::SequenceDef

Synopsis Interface SequenceDef represents an IDL sequence definition. It inherits from the interface IDLType.

CORBA

```
// IDL
// In module CORBA.
interface SequenceDef : IDLType {
   attribute unsigned long bound;
   readonly attribute TypeCode element_type;
   attribute IDLType element_type_def;
};
```

Notes CORBA compliant.

See Also CORBA::IDLType
CORBA::Repository::create_sequence()

SequenceDef::bound

Synopsis

```
attribute unsigned long bound;
```

Description The bound of the sequence. A bound of 0 indicates an unbounded sequence type.

Changing the bound attribute also updates the inherited type attribute.

Notes CORBA compliant.

See Also CORBA::SequenceDef::type

SequenceDef::element_type

Synopsis `readonly attribute TypeCode element_type;`

Description Describes the type of the element contained within this sequence. The attribute `element_type` contains the same information.

Notes CORBA compliant.

See Also `CORBA::element_type_def`

SequenceDef::element_type_def

Synopsis `attribute IDLType element_type_def;`

Description Describes the type of element contained within this sequence. The attribute `element_type_def` contains the same information. Setting the `element_type_def` attribute also updates the `element_type` and `IDLType::type` attributes.

Notes CORBA compliant.

See Also `CORBA::SequenceDef::element_type`
`CORBA::IDLType::type`

SequenceDef::type

Synopsis `readonly attribute TypeCode type;`

Description The `type` attribute is inherited from interface `IDLType`. This attribute is a `tk_sequence` `TypeCode` that describes the sequence. It is updated automatically whenever the attributes `bound` or `element_type_def` are changed.

Notes CORBA compliant.

See Also `CORBA::SequenceDef::element_type_def`
`CORBA::SequenceDef::bound`

CORBA::StringDef

Synopsis Interface `StringDef` represents a bounded string type. Unbounded strings are primitive types. A `StringDef` object is anonymous, that is, unnamed.

CORBA

```
// IDL
// In module CORBA.
interface StringDef : IDLType {
   attribute unsigned long bound;
};
```

Notes CORBA compliant.

See Also

```
CORBA::IDLType
CORBA::PrimitiveDef
CORBA::Repository::create_string()
```

StringDef::bound

Synopsis

```
attribute unsigned long bound;
```

Description Specifies the bound of the string. This cannot be zero.

Notes CORBA compliant.

CORBA::StructDef

Synopsis Interface `StructDef` describes an IDL structure.

CORBA

```
// IDL
// In module CORBA.
struct StructMember {
   Identifier name;
   TypeCode type;
   IDLType type_def;
};

typedef sequence<StructMember> StructMemberSeq;

interface StructDef : TypedefDef {
   attribute StructMemberSeq members;
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`
`CORBA::Container::create_struct()`

StructDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The DefinitionKind for the kind member is dk_Struct. The value member is an any whose TypeCode is _tc_TypeDescription and whose value is a structure of type TypeDescription:

```
// IDL
// In module CORBA.
struct TypeDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
};
```

Notes CORBA compliant.

See Also CORBA::TypedefDef::describe()

StructDef::members

Synopsis `attribute StructMemberSeq members;`

Description Describes the members of the structure.

You can modify this attribute to change the members of a structure. Only the name and type_def fields of each StructMember should be set (the type field should be set to _tc_void and it is set automatically to the TypeCode of the type_def field).

Notes CORBA compliant.

See Also CORBA::TypedefDef

CORBA::TypedefDef

Synopsis The abstract interface `TypedefDef` is inherited by all IFR interfaces (except `InterfaceDef`) that define named types. Named types are types for which a name must appear in their definition such as structures, unions, enumerations and aliases.

Anonymous types (`PrimitiveDef`, `StringDef`, `SequenceDef` and `ArrayDef`) do not inherit from `TypedefDef`.

The role of interface `TypedefDef` in the IFR is not of particular importance; it is merely a base interface for `StructDef`, `UnionDef`, `EnumDef` and `AliasDef`.

CORBA

```
// IDL
// In module CORBA.

interface TypedefDef : Contained, IDLType {
};
```

Notes CORBA compliant.

See Also `CORBA::Contained`

TypedefDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The DefinitionKind for the kind member is dk_Typedef. The value member is an any whose TypeCode is _tc_TypeDescription and whose value is a structure of type TypeDescription:

```
// IDL
// In module CORBA.
struct TypeDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
};
```

See Also CORBA::Contained::describe()

CORBA::UnionDef

Synopsis Interface `UnionDef` represents an IDL union.

CORBA

```
// IDL
// In module CORBA.

struct UnionMember {
   Identifier name;
   any label;
   TypeCode type;
   IDLType type_def;
};

typedef sequence <UnionMember> UnionMemberSeq;

interface UnionDef : TypedefDef {
   readonly attribute TypeCode discriminator_type;
   attribute IDLType discriminator_type_def;
   attribute UnionMemberSeq members;
};
```

Notes CORBA compliant.

See Also

```
CORBA::Contained
CORBA::TypedefDef
CORBA::Container::create_union()
```

UnionDef::describe()

Synopsis

```
Description describe();
```

Description Inherited from `Contained`, the `describe()` operation returns a structure of type `Contained::Description`:

```
struct Description {
   DefinitionKind kind;
   any value;
};
```

The DefinitionKind for the kind member is dk_Union. The value member is an any whose TypeCode is _tc_TypeDescription and whose value is a structure of type TypeDescription:

```
// IDL
struct TypeDescription {
   Identifier name;
   RepositoryId id;
   RepositoryId defined_in;
   VersionSpec version;
   TypeCode type;
};
```

See Also CORBA::TypedefDef::describe()

UnionDef::discriminator_type

Synopsis

```
readonly attribute TypeCode discriminator_type;
```

Description Describes the discriminator type for this union. For example, if the union currently contains a long, the discriminator_type is _tc_long. The attribute discriminator_type_def contains the same information.

Notes CORBA compliant.

See Also CORBA::TypeCode

UnionDef::discriminator_type_def

Synopsis

```
attribute IDLType discriminator_type_def;
```

Description Describes the discriminator type for this union. The attribute discriminator_type contains the same information.

Changing this attribute automatically updates the discriminator_type attribute and the IDLType::type attribute.

Notes CORBA compliant.

See Also CORBA::IDLType::type
CORBA::UnionDef::dis

UnionDef::members

Synopsis `attribute UnionMemberSeq members;`

Description Contains a description of each union member: its name, label and type (`type` and `type_def` contain the same information).

You can modify the `members` attribute to change the union's members. You should set only the `name`, `label` and `type_def` fields of each `UnionMember` (set the `type` field to `_tc_void`, and it is set automatically to the `TypeCode` of the `type_def` field).

Notes CORBA compliant.

See Also `CORBA::TypedefDef`

Part III

IDL Interface to the Orbix Daemon

IDL Interface to the Orbix Daemon

Synopsis

The Orbix daemon is itself an Orbix server whose IDL interface is called `IT_daemon`. The Orbix daemon is responsible for launching servers (if an appropriate server is not already running) and dispatching operation requests. The daemon is involved, if at all, only with the first operation request from a client—it is not involved with subsequent requests. The Orbix daemon executable is called `orbixd` (`orbixd.exe` on Windows 95 and Windows NT).

The Orbix daemon is also responsible for managing the Implementation Repository. It accepts all requests from the Orbix utilities—`putit`, `catit`, `lsit` and so on—and from Orbix Server Manager.

The Orbix daemon is also used to search for an appropriate server via the locator and manages the configuration files used by the default locator:

Description	**UNIX**	**Windows 95, Windows NT**
The *server location* file maintains a mapping from a server name to a list of hosts and host groups on which the server runs.	`Orbix.hosts`	`orbix.hst`
The *host groups definition* file defines the host groups.	`Orbix.hostgroups`	`orbix.hgp`

Naturally, programs can alternatively edit these files or execute one of the utility commands `serverhosts`, `servergroups` or `grouphosts` as appropriate (see the *Orbix C++ Administrator's Guide*).

As an Orbix server, applications may bind to the Orbix daemon in the normal way. For example, you can use the following code to bind to the Orbix daemon on host `targetHost`:

```
// C++
#include <daemon.hh>

IT_daemon_var daemon;
try {
   daemon = IT_daemon::_bind("", targetHost);
} ...
```

Orbix

```
// IDL
interface IT_daemon{
   boolean lookUp(in string service,
      out stringSeq hostList,
      in octet hops,
      in string tag);

   boolean addHostsToServer(in string server,
      in stringSeq hostList);
   boolean addHostsToGroup(in string group,
      in stringSeq hostList);
   boolean addGroupsToServer(in string server,
      in stringSeq groupList);
   boolean delHostsFromServer(in string server,
      in stringSeq hostList);
   boolean delHostsFromGroup(in string group,
      in stringSeq hostList);
   boolean delGroupsFromServer(in string server,
      in stringSeq groupList);
   boolean listHostsInServer(in string server,
      out stringSeq hostList);
   boolean listHostsInGroup(in string group,
      out stringSeq hostList);
   boolean listGroupsInServer(in string server,
      out stringSeq groupList);

   enum LaunchStatus {
       inActive,
       manualLaunch,
       automaticLaunch
   };
```

```
struct serverDetails {
   string server;
   string marker;
   string principal;
   string code;
   string comms;
   string port;
   unsigned long OSspecific;
   LaunchStatus status;
};

void listActiveServers(out serverDetailsSeq servers);

void killServer(in string name, in string marker);

void newSharedServer(in string serverName,
   in stringSeq marker,
   in stringSeq launchCommand,
   in unsigned long mode_flags);
void newUnSharedServer(in string serverName,
   in stringSeq marker,
   in stringSeq launchCommand,
   in unsigned long mode_flags);

void newPerMethodServer(in string serverName,
   in stringSeq method,
   in stringSeq launchCommand);

void listServers(in string subdir,
   out stringSeq servers);

void deleteServer(in string serverName);

boolean serverExists(in string serverName);

void getServer(in string serverName,
   out string commsProtocol,
   out string codeProtocol,
   out string activationPolicy,
   out unsigned long mode_flags,
   out string owner,
   out string invokeList,
   out string launchList,
```

```
        out stringSeq markers,
        out stringSeq methods,
        out stringSeq commands);
    void addUnsharedMarker(in string serverName,
        in string markerName,
        in string newCommand);
    void removeUnsharedMarker(in string serverName,
        in string markerName);
    void addSharedMarker(in string serverName,
        in string markerName,
        in string newCommand);
    void removeSharedMarker(in string serverName,
        in string markerName);

    void addMethod(in string serverName,
        in string methodName,
        in string newCommand);
    void removeMethod(in string serverName,
        in string methodName);
    void newDirectory(in string dirName);
    void deleteDirectory(in string dirName,
        in boolean deleteChildren);
    void changeOwnerServer(in string new_owner,
        in string serverName);
    void addInvokeRights(in string userGroup,
        in string serverName);
    void removeInvokeRights(in string userGroup,
        in string serverName);
    void addLaunchRights(in string userGroup,
        in string serverName);
    void removeLaunchRights(in string userGroup,
        in string serverName);
    void addInvokeRightsDir(in string userGroup,
        in string dirName);

    void removeInvokeRightsDir(in string userGroup,
        in string dirName);
    void addLaunchRightsDir(in string userGroup,
        in string dirName);
    void removeLaunchRightsDir(in string userGroup,
        in string dirName);
};
```

Notes Orbix specific.

IT_daemon::addDirRights()

Synopsis
```
addDirRights(in string userGroup, in string dirName);
```

Description Adds the user or group in `userGroup` to the list of owners for the directory `dirName`.

Notes Orbix specific.

IT_daemon::addGroupsToServer()

Synopsis
```
boolean addGroupsToServer(
   in string server,
   in stringSeq groupList);
```

Description Adds the groups specified in `groupList` to the list of groups for the entry for `server` in the *server location* locator configuration file.

Notes Orbix specific.

See Also `IT_daemon::delGroupsFromServer()`
`CORBA::locatorClass`

IT_daemon::addHostsToGroup()

Synopsis
```
boolean addHostsToGroup(
   in string group,
   in stringSeq hostList);
```

Description Adds the hosts specified in `hostlist` to the group, `group`, in the *host groups definition* locator configuration file.

Notes Orbix specific.

See Also `IT_daemon::delHostsFromGroup()`
`CORBA::LocatorClass`

IT_daemon::addHostsToServer()

Synopsis

```
boolean addHostsToServer(
   in string server,
   in stringSeq hostList);
```

Description Adds the host(s) specified in `hostList` to the list of hosts for the entry for `server` in the *server location* locator configuration file.

Notes Orbix specific.

See Also `IT_daemon::delHostsFromServer()`
`CORBA::locatorClass`

IT_daemon::addInvokeRights()

Synopsis

```
void addInvokeRights(
   in string userGroup,
   in string serverName);
```

Description Adds the user or group in `userGroup` to the *invoke* access control list (ACL) for the server `serverName`. A user who has invoke rights on a server can invoke operations on any object controlled by that server. By default, only the owner of an Implementation Repository entry has invoke rights on the server registered.

Notes Orbix specific.

See Also `IT_daemon::RemoveInvokeRights()`
`IT_daemon::addLaunchRights()`

IT_daemon::addInvokeRightsDir()

Synopsis

```
void addInvokeRightsDir(
   in string userGroup,
   in string dirName);
```

Description Adds the user or group in `userGroup` to the *invoke* access control list (ACL) for the directory `dirName`.

Notes Orbix specific.

See Also `IT_daemon::RemoveInvokeRightsDir()`
`IT_daemon::AddInvokeRights()`

IT_daemon::addLaunchRights()

Synopsis

```
void addLaunchRights(
   in string userGroup,
   in string serverName);
```

Description Adds the user or group in `userGroup` to the *launch* access control list for the server `serverName`. By default, only the owner of an Implementation Repository entry has launch rights on the server registered.

Notes Orbix specific.

See Also `IT_daemon::removeLaunchRights()`

IT_daemon::addLaunchRightsDir()

Synopsis

```
void addLaunchRightsDir(
   in string userGroup,
   in string dirName);
```

Description Adds the user or group in `userGroup` to the *launch* access control list for the directory `dirName`.

Notes Orbix specific.

See Also `IT_daemon::addLaunchRights()`
`IT_daemon::removeLaunchRightsDir()`

IT_daemon::addMethod()

Synopsis

```
void addMethod(
   in string serverName,
   in string methodName,
   in string newCommand);
```

Description Adds an *activation order* to the Implementation Repository entry for the per-method server, `serverName`. This activation order specifies that an invocation of a method whose name matches the method (or method pattern) indicated in `methodName` should cause the server to be launched using the command `newCommand`.

Notes Orbix specific.

See Also `IT_daemon::removeMethod()`

IT_daemon::addSharedMarker()

Synopsis

```
void addSharedMarker(
   in string serverName,
   in string markerName,
   in string newCommand);
```

Description Adds an *activation order* to the Implementation Repository entry for the shared server, `serverName`. This activation order specifies that an invocation for an object whose marker matches the marker (or marker pattern) indicated in `markerName` should cause the server to be launched (if not already running) using the command, `newCommand`.

Notes Orbix specific.

See Also `IT_daemon::removeSharedMarker()`

IT_daemon::addUnsharedMarker()

Synopsis

```
void addUnsharedMarker(
   in string serverName,
   in string markerName,
   in string newCommand);
```

Description Adds an *activation order* to the Implementation Repository entry for the unshared server, `serverName`. This activation order specifies that an invocation for an object whose marker matches the marker (or marker pattern) indicated in `markerName` should cause the server to be launched using the command, `newCommand`.

Notes Orbix specific.

See Also `IT_daemon::removeUnsharedMarker()`

IT_daemon::changeOwnerServer()

Synopsis

```
void changeOwnerServer(
   in string new_owner,
   in string serverName);
```

Description Changes the ownership of the Implementation Repository entry for the server `serverName`. The user invoking this operation must be the current owner of the Implementation Repository entry.

Notes Orbix specific.

IT_daemon::deleteDirectory()

Synopsis

```
void deleteDirectory(
   in string dirName,
   in boolean deleteChildren);
```

Description Removes a registration directory from the Implementation Repository. If `deleteChildren` is true, server entries and sub-directories are also deleted.

Notes Orbix specific.

See Also `IT_daemon::newDirectory()`

IT_daemon::deleteServer()

Synopsis

```
void deleteServer(
   in string serverName);
```

Description Deletes the entry for the server, `serverName`, from the Implementation Repository.

Notes Orbix specific.

See Also `IT_daemon::newPerMethodServer()`
`IT_daemon::newSharedServer()`
`IT_daemon::newUnsharedServer()`

IT_daemon::delGroupsFromServer()

Synopsis

```
boolean delGroupsFromServer(
   in string server,
   in stringSeq groupList);
```

Description Deletes the group(s) specified in `groupList` from the list of host groups that support the server `server`. This list is maintained in the *server location* locator configuration file.

Notes Orbix specific.

See Also `IT_daemon::addGroupsToServer()`

IT_daemon::delHostsFromGroup()

Synopsis

```
boolean delHostsFromGroup(
   in string group,
   in stringSeq hostList);
```

Description Deletes the hosts specified in `hostlist` from the group, `group`, in the *host groups definition* locator configuration file.

Notes Orbix specific.

See Also `IT_daemon::AddHostsToGroup()`

IT_daemon::delHostsFromServer()

Synopsis

```
boolean delHostsFromServer(
   in string server,
   in stringSeq hostList);
```

Description Deletes the hosts specified in `hostList` from the list of hosts that support the server `server` in the *server location* locator configuration file.

Notes Orbix specific.

See Also `IT_daemon::addHostsToServer()`

IT_daemon::getServer()

Synopsis

```
void getServer(
   in string serverName,
   out string commsProtocol,
   out string codeProtocol,
   out string activationPolicy,
   out unsigned long mode_flags,
   out string owner,
   out string invokeList,
   out string launchList,
   out stringSeq markers,
   out stringSeq methods,
   out stringSeq commands);
```

Description Gets full information about the Implementation Repository entry for `serverName`.

Notes Orbix specific.

IT_daemon::killServer()

Synopsis

```
void killServer(
   in string name,
   in string marker);
```

Description Kills a server process. Where there is more than one server process, the marker parameter is used to select between different processes. The marker parameter is required when killing a process in the unshared mode.

Notes Orbix specific.

IT_daemon::LaunchStatus

Synopsis

```
enum LaunchStatus {
   inActive,
   manualLaunch,
   automaticLaunch
};
```

Description Possible values for the `LaunchStatus` of a server.

Notes Orbix specific.

IT_daemon::listActiveServers()

Synopsis

```
typedef sequence<serverDetails> serverDetailsSeq;
void listActiveServers(
   out serverDetailsSeq servers);
```

Description Returns a list of active server processes known to the Orbix daemon and includes information about each process.

Notes Orbix specific.

See Also `IT_daemon::serverDetails`

IT_daemon::listGroupsInServer()

Synopsis

```
boolean listGroupsInServer(
   in string server,
   out stringSeq groupList);
```

Description Returns a list of the host groups (as listed in the *server location* locator configuration file) of which the server `server` is a member.

Notes Orbix specific.

IT_daemon::listHostsInGroup()

Synopsis

```
boolean listHostsInGroup(
   in string group,
   out stringSeq hostList);
```

Description Returns a list of the hosts in the host group, `group`, as listed in the *host groups definition* locator configuration file.

Notes Orbix specific.

IT_daemon::listHostsInServer()

Synopsis

```
boolean listHostsInServer(
   in string server,
   out stringSeq hostList);
```

Description Returns a list of the hosts on which the server `server` runs as listed in the *server location* configuration file.

Notes Orbix specific.

IT_daemon::listServers()

Synopsis

```
void listServers(
   in string subdir,
   out stringSeq servers);
```

Description Lists all servers in the Implementation Repository directory `subdir`.

Notes Orbix specific.

IT_daemon::lookUp()

Synopsis

```
boolean lookUp(
   in string service,
   out stringSeq hostList,
   in octet hops,
   in string tag)
```

Description Invokes the corresponding `lookUp()` function on the locator. This is normally the default locator—unless an alternative locator has been installed.

Notes Orbix specific.

See Also `CORBA::locatorClass`
`CORBA::locatorClass::lookUp()`

IT_daemon::newDirectory()

Synopsis

```
void newDirectory(in string dirName);
```

Description Creates a new Implementation Repository directory. The name is specified in `dirName` and may be a new directory or a subdirectory of an existing directory The '/' character is used to indicate a subdirectory—for example, the name "`server/banks`" is a valid directory name.

Notes Orbix specific.

See Also `IT_daemon::deleteDirectory()`

IT_daemon::newPerMethodServer()

Synopsis

```
void newPerMethodServer(
   in string serverName,
   in stringSeq methods,
   in stringSeq launchCommands);
```

Description Creates a new entry in the Implementation Repository for the per-method server `serverName`. The new entry has an activation order for each element of the sequences in `methods` and `launchCommands`.

Parameters

`serverName`	The name of the server.
`methods`	A sequence of methods. Each element in the sequence has a corresponding element in the sequence `launchCommands`.
`launchCommands`	A sequence of launch commands (the full path name of an executable file). Each element in the sequence has a corresponding element in the sequence `methods`.

Notes Orbix specific.

IT_daemon::newSharedServer()

Synopsis

```
void newSharedServer(
   in string serverName,
   in stringSeq markers,
   in stringSeq launchCommands,
   in unsigned long mode_flags);
```

Description Creates a new Implementation Repository entry for the shared server `serverName`. The new entry has an activation order for each element of the sequences in `markers` and `launchCommands`.

Parameters

`serverName`	The name of the server.
`markers`	A sequence of markers. Each element in the sequence has a corresponding element in the sequence `launchCommands`.
`launchCommands`	A sequence of launch commands (the full path name of an executable file and possibly command line switches). Each element in the sequence has a corresponding element in the sequence `markers`.
`mode_flags`	Further activation mode details. `0` Multiple-client activation mode. `1` Per-client activation mode. `2` Per-client-process activation mode.

Notes Orbix specific.

IT_daemon::newUnSharedServer()

Synopsis

```
void newUnSharedServer(
   in string serverName,
   in stringSeq markers,
   in stringSeq launchCommands,
   in unsigned long mode_flags);
```

Description Creates a new Implementation Repository entry for the unshared server `serverName`. The new entry has an activation order for each element of the sequences in `markers` and `launchCommands`.

Parameters

`serverName`	The name of the server.
`markers`	A sequence of markers. Each element in the sequence has a corresponding element in the sequence `launchCommands`.
`launchCommands`	A sequence of launch commands (the full path name of an executable file and possibly command line switches). Each element in the sequence has a corresponding element in the sequence `markers`.
`mode_flags`	Further activation mode details. `0` Multiple-client activation mode. `1` Per-client activation mode. `2` Per-client-process activation mode.

Notes Orbix specific.

IT_daemon::removeDirRights()

Synopsis

```
removeDirRights(in string userGroup, in string dirName);
```

Description Removes the user or group in `userGroup` to the list of owners for the directory `dirName`.

Notes Orbix specific.

IT_daemon::removeInvokeRights()

Synopsis

```
void removeInvokeRights(
   in string userGroup,
   in string serverName);
```

Description Removes the user or group in `userGroup` from the invoke access control list for server `serverName`.

Notes Orbix specific.

See Also `IT_daemon::AddInvokeRights()`

IT_daemon::removeInvokeRightsDir()

Synopsis

```
void removeInvokeRightsDir(
   in string userGroup,
   in string dirName);
```

Description Removes the user or group in `userGroup` from the *invoke* access control list for directory `dirName`.

Notes Orbix specific.

See Also `IT_daemon::AddInvokeRightsDir()`

IT_daemon::removeLaunchRights()

Synopsis

```
void removeLaunchRights(
   in string userGroup,
   in string serverName);
```

Description Removes the user or group in `userGroup` from the *launch* access control list for server `serverName`.

Notes Orbix specific.

See Also `IT_daemon::addLaunchRights()`

IT_daemon::removeLaunchRightsDir()

Synopsis

```
void removeLaunchRightsDir(
   in string userGroup,
   in string dirName);
```

Description Removes the user or group in `userGroup` from the *launch* access control list for the directory `dirName`.

Notes Orbix specific.

See Also `IT_daemon::addLaunchRightsDir()`

IT_daemon::removeMethod()

Synopsis

```
void removeMethod(
   in string serverName,
   in string methodName);
```

Description Removes the activation order for the method (or method pattern) in `methodName` from the Implementation Repository entry for the per-method server, `serverName`.

Notes Orbix specific.

See Also `IT_daemon::addMethod()`

IT_daemon::removeSharedMarker()

Synopsis

```
void removeSharedMarker(
   in string serverName,
   in string markerName);
```

Description Removes the activation order for the marker (or marker pattern) in `markerName` from the Implementation Repository entry for the shared server, `serverName`.

Notes Orbix specific.

See Also `IT_daemon::addSharedMarker()`

IT_daemon::removeUnsharedMarker()

Synopsis

```
void removeUnsharedMarker(
   in string serverName,
   in string markerName);
```

Description Removes the activation order for the marker (or marker pattern) in `markerName` from the Implementation Repository entry for the unshared server, `serverName`.

Notes Orbix specific.

See Also `IT_daemon::addUnsharedMarker()`

IT_daemon::serverDetails

Synopsis

```
struct serverDetails {
   string server;
   string marker;
   string principal;
   string code;
   string comms;
   string port;
   unsigned long OSspecific;
   LaunchStatus status;
};
```

Description The members of the struct are as follows:

`server`	The name of the server.
`marker`	The marker (if any).
`principal`	The name of the user for whom the server was launched. This is null if the server is not a per-client server.
`code`	The encoding protocol—for example, XDR.
`comms`	The transport protocol—for example, TCP/IP.
`port`	The port used by the communications system.
`OSspecific`	On UNIX, this is the operating system process identifier of the server process.

`status`	One of the enumerated values, `inActive`, `manualLaunch` or `automaticLaunch`.

Notes Orbix specific.

See Also `IT_daemon::LaunchStatus`

IT_daemon::serverExists()

Synopsis

```
boolean serverExists(in string serverName);
```

Description Determines whether there is an entry for the server `serverName` in the Implementation Repository.

Notes Orbix specific.

Appendices

Appendix A
IDL Reference

This appendix presents reference material on the Interface Definition Language.

IDL Grammar

This section presents the grammar of IDL. The notation is as follows:

Symbol	Meaning
`::=`	Is defined to be
`|`	Alternatively
`<text>`	Non-terminal
`"text"`	Literal
`*`	The preceding syntactic unit is to be repeated zero or more times.
`+`	The preceding syntactic unit is to be repeated one or more times.
`{}`	The enclosed syntactic units are to be grouped as a single syntactic unit (the following * is to be applied to the enclosed syntactic units).
`[]`	The enclosed syntactic unit is optional (it may occur zero or one time).

Note that the two characters ">>" are always interpreted as a right shift operator. This means that a declaration of the form:

```
// IDL
typedef sequence<sequence<long> >  sslong;
```

cannot be written without a white space between the two > characters:

```
// IDL
// Illegal
typedef sequence<sequence<long>>  sslong;
```

The same restriction applies in C++ when declaring template classes.

IDL Grammar: EBNF

```
(1) <specification>        ::= <definition>+
(2) <definition>           ::= <type_dcl> ";"
                           |   <const_dcl> ";"
                           |   <except_dcl> ";"
                           |   <interface> ";"
                           |   <module> ";"
(3) <module>               ::= "module" <identifier>
                                   "{" <definition>+ "}"
(4) <interface>            ::= <interface_dcl>
                           |   <forward_dcl>
(5) <interface_dcl>        ::= <interface_header>
                                   "{" <interface-body> "}"
(6) <forward_dcl>          ::= "interface" <identifier>
(7) <interface_header>     ::= "interface" <identifier>
                                   [<inheritance_spec>]
(8) <interface_body>       ::= <export>*
(9) <export>               ::= <type_dcl> ";"
                           |   <const_dcl> ";"
                           |   <except_dcl> ";"
                           |   <attr_dcl> ";"
                           |   <op_dcl> ";"
```

```
(10) <inheritance_spec>     ::= ":" <scoped_name> {"," <scoped_name>}*
(11) <scoped_name>          ::= <identifier>
                            |   "::" <identifier>
                            |   <scoped_name> "::" <identifier>
(12) <const_dcl>            ::= "const" <const_type> <identifier>
                                     "="<const_exp>
(13) <const_type>           ::= <integer_type>
                            |   <char_type>
                            |   <boolean_type>
                            |   <floating_pt_type>
                            |   <string_type>
                            |   <scoped_name>
(14) <const_exp>            ::= <or_expr>
(15) <or_expr>              ::= <xor_expr>
                            |   <or_expr> "|" <xor_expr>
(16) <xor_expr>             ::= <and_expr>
                            |   <xor_expr> "^" <and_expr>
(17) <and_expr>             ::= <shift_expr>
                            |   <and_expr> "&" <shift_expr>
(18) <shift_expr>           ::= <add_expr>
                            |   <shift_expr> ">>"<add_expr>
                            |   <shift_expr> "<<"<add_expr>
(19) <add_expr>             ::= <mult_expr>
                            |   <add_expr> "+" <mult_expr>
                            |   <add_expr> "-" <mult_expr>
(20) <mult_expr>            ::= <unary_expr>
                            |   <mult_expr> "*" <unary_expr>
                            |   <mult_expr> "/" <unary_expr>
                            |   <mult_expr> "%" <unary_expr>
(21) <unary_expr>           ::= <unary_operator> <primary_expr>
                            |   <primary_expr>
(22) <unary_operator>       ::= "-"
                            |   "+"
                            |   "~"
```

```
(23) <primary_expr>          ::= <scoped_name>
                             |   <literal>
                             |   "(" <const_exp> ")"
(24) <literal>               ::= <integer_literal>
                             |   <string_literal>
                             |   <character_literal>
                             |   <floating_pt_literal>
                             |   <boolean_literal>
(25) <boolean_literal>       ::= "TRUE"
                             |   "FALSE"
(26) <positive_int_const>    ::= <const_exp>
(27) <type_dcl>              ::= "typedef" <type_declarator>
                             |   <struct_type>
                             |   <union_type>
                             |   <enum_type>
(28) <type_declarator>       ::= <type_spec> <declarators>
(29) <type_spec>             ::= <simple_type_spec>
                             |   <constr_type_spec>
(30) <simple_type_spec>      ::= <base_type_spec>
                             |   <template_type_spec>
                             |   <scoped_name>
(31) <base_type_spec>        ::= <floating_pt_type>
                             |   <integer_type>
                             |   <char_type>
                             |   <boolean_type>
                             |   <octet_type>
                             |   <any_type>
(32) <template_type_spec>    ::= <sequence_type>
                             |   <string_type>
(33) <constr_type_spec>      ::= <struct_type>
                             |   <union_type>
                             |   <enum_type>
(34) <declarators>           ::= <declarator> { "," <declarator> }*
(35) <declarator>            ::= <simple_declarator>
```

```
                              |   <complex_declarator>
(36) <simple_declarator>      ::= <identifier>
(37) <complex_declarator>     ::= <array_declarator>
(38) <floating_pt_type>       ::= "float"
                              |   "double"
(39) <integer_type>           ::= <signed_int>
                              |   <unsigned_int>
(40) <signed_int>             ::= <signed_long_int>
                              |   <signed_short_int>
(41) <signed_long_int>        ::= "long"
(42) <signed_short_int>       ::= "short"
(43) <unsigned_int>           ::= <unsigned_long_int>
                              |   <unsigned_short_int>
(44) <unsigned_long_int>      ::= "unsigned" "long"
(45) <unsigned_short_int>     ::= "unsigned" "short"
(46) <char_type>              ::= "char"
(47) <boolean_type>           ::= "boolean"
(48) <octet_type>             ::= "octet"
(49) <any_type>               ::= "any"
(50) <struct_type>            ::= "struct" <identifier>
                                      "{" <member_list> "}"
(51) <member_list>            ::= <member>+
(52) <member>                 ::= <type_spec> <declarators> ";"
(53) <union_type>             ::= "union" <identifier> "switch"
                                     "(" <switch_type_spec> ")"
                                     "{" <switch_body> "}"
(54) <switch_type_spec>       ::= <integer_type>
                              |   <char_type>
                              |   <boolean_type>
                              |   <enum_type>
                              |   <scoped_name>
(55) <switch_body>            ::= <case>+
(56) <case>                   ::= <case_label>+ <element_spec> ";"
(57) <case_label>             ::= "case" <const_exp> ":"
```

```
                            |   "default" ":"
(58) <element_spec>         ::= <type_spec> <declarator>
(59) <enum_type>            ::= "enum" <identifier> "{" <enumerator>
                                    { "," <enumerator> }* "}"
(60) <enumerator>           ::= <identifier>
(61) <sequence_type>        ::= "sequence" "<" <simple_type_spec>
                                    "," <positive_int_const> ">"
                            |   "sequence" "<" <simple_type_spec> ">"
(62) <string_type>          ::= "string" "<" <positive_int_const> ">"
                            |   "string"
(63) <array_declarator>     ::= <identifier> <fixed_array_size>+
(64) <fixed_array_size>     ::= "[" <positive_int_const> "]"
(65) <attr_dcl>             ::= ["readonly"] "attribute"
                                    <param_type_spec>
                                    <simple_declarator>
                                    {","<simple_declarator>}*
(66) <except_dcl>           ::= "exception" <identifier>
                                     "{" <member>* "}"
(67) <op_dcl>               ::= [<op_attribute>] <op_type_spec>
                                    <identifier>
                                    <parameter_dcls>
                                    [<raises_expr>] [<context_expr>]
(68) <op_attribute>         :=  "oneway"
(69) <op_type_spec>         ::= <param_type_spec>
                            |   "void"
(70) <parameter_dcls>       ::= "(" <param_dcl> {"," <param_dcl>}* ")"
                            |   "(" ")"
(71) <param_dcl>            ::= <param_attribute> <param_type_spec>
                                    <simple_declarator>
(72) <param_attribute>      ::= "in"
                            |   "out"
                            |   "inout"
(73) <raises_expr>          ::= "raises" "(" <scoped_name>
                                    { "," <scoped_name> }* ")"
```

```
(74) <context_expr>          ::= "context" "(" <string_literal>
                                     { "," <string_literal>}* ")"
(75) <param_type_spec>       ::= <base_type_spec> <string_type>
                                 <scoped_name>
```

Keywords

The following are keywords in IDL.

any	default	interface	readonly	unsigned
attribute	double	long	sequence	union
boolean	enum	module	short	void
case	exception	octet	string	FALSE
char	float	oneway	struct	Object
const	in	out	switch	TRUE
context	inout	raises	typedef	

Keywords must be written exactly as shown. For example, writing `Boolean` rather than `boolean` gives a compilation error.

Appendix B
System Exceptions

System Exceptions Defined by CORBA

Identifier	Exception	Description
10000	UNKNOWN	Unknown exception
10020	BAD_PARAM	An invalid parameter was passed
10040	NO_MEMORY	Dynamic memory allocation failure
10060	IMP_LIMIT	Violated implementation limit
10080	COMM_FAILURE	Communication failure
10100	INV_OBJREF	Invalid object reference
10120	NO_PERMISSION	No permission for attempted operation
10140	INTERNAL	ORB internal error
10160	MARSHAL	Error marshalling parameter/result
10180	INITIALIZE	ORB initialisation failure
10200	NO_IMPLEMENT	Operation implementation unavailable
10220	BAD_TYPECODE	Bad TypeCode
10240	BAD_OPERATION	Invalid operation
10260	NO_RESOURCES	Insufficient resources for request
10280	NO_RESPONSE	Response to request not yet available
10300	PERSIST_STORE	Persistent storage failure

Identifier	Exception	Description
10320	BAD_INV_ORDER	Routine invocations out of order
10340	TRANSIENT	Transient failure - reissue request
10360	FREE_MEM	Cannot free memory
10380	INV_IDENT	Invalid identifier syntax
10400	INV_FLAG	Invalid flag was specified
10420	INTF_REPOS	Error accessing interface repository
10440	BAD_CONTEXT	Error processing context object
10460	OBJ_ADAPTOR	Failure detected by object adaptor
10480	DATA_CONVERSION	Data conversion error

System Exceptions Specific to Orbix

Identifier	Orbix Exception	Description
10500	FILTER_SUPPRESS	Suppress exception raised in per-object pre-filter
10520	LOCATOR	Locator error
10540	ASCII_FILE	ASCII file error
10560	LICENCING	Licensing error
10580	VXWORKS_EX	VxWorks error
10600	IIOP	IIOP error
10620	NO_CONFIG_VALUE	No configuration value set for one of the mandatory configuration entries

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