



COSS: The Common Object Services Specifications

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The Object Management Group (OMG) is promoting standards for distributed object systems among system software vendors. The OMG has currently adopted two sets of standards, known as CORBA and COSS. CORBA is the core communication mechanism which all OMG objects use: it enables distributed objects to operate on each other. COSS defines standard services that support the integration of distributed objects.

The Common Object Request Broker Architecture (CORBA)[1] defines an interface definition language (IDL) for objects. The language allows designers to specify interfaces as a set of operations and attributes. The CORBA defines object references. Object references are typed by interfaces specified in IDL. Object references unify access to objects. A client using an object cannot tell if the object being accessed is local or remote or how the object is implemented or stored.

The Common Object Services Specifications (COSS)[2] define a set of services for distributed object systems. The services are specified in OMG IDL and are intended to operate in CORBA environments. The first volume of COSS defines an object life cycle service for creating, copying, moving and removing objects, a name service for mapping human readable names to object reference and an event service for decoupling communication between objects.

Life Cycle Service

The COSS Life Cycle Service defines a model for object creation in distributed object environments based on *object factories*. Factories are simply objects that create other objects. Since factories are themselves distributed objects, a client “over here” can create an object “over there.”

The COSS Life Cycle Service also defines a *LifeCycleObject* interface to support the copying, moving and deleting of objects.

Name Service

The COSS Name Service defines a light-weight but powerful service for naming objects. The service defines the *NamingContext* interface. Naming contexts are objects that map names to object references. An object may have many names. Names are unique within a context. There is no requirement that all objects are named.

Since naming contexts are themselves objects, they can be named in other naming contexts, forming naming graphs. Clients can provide compound names to traverse a naming graph. Typically there are multiple naming graphs in a CORBA based environment; there is no requirement that all naming contexts are connected.

Event Service

The CORBA defines a synchronous, object-to-object communication model. The COSS Event Service defines an object called an *event channel*. Event channels decouple the communication between objects. Using event channels, one-or-more *consumer* objects can be notified of events generated by one-or-more *supplier* objects.

By using an event channel, the communication between objects can be asynchronous and anonymous. Furthermore, an event channel relieves a supplier of events from the burden of handling failures in a distributed environment.

Future Services

The OMG has adopted a specification for object persistence, although it is not included in the first volume of COSS. Future Common Object Service Specifications include transactions, concurrency control, externalization, object relationships, queries, licensing, security and properties.

References

- [1] Object Management Group, “The Common Object Request Broker: Architecture and Specification”, OMG Document Number 91.12.1, December, 1991.
- [2] Object Management Group, “The Common Object Services Specification, Volume 1”, OMG Document Number 94.1.1, January, 1994.