Multiple Interfaces in COM

In Microsoft's Common Object Model (COM), all components implement the interface IUnknown. This interface specifies only a few methods (method is the COM term for operation), including the method QueryInterface. A client of a component uses QueryInterface to interrogate the component to determine if it implements an interface of interest to the client.

QueryInterface accepts a single input parameter, which is used to indicate the interface of interest. If the component supports the indicated interface, a reference to the interface is returned. This reference can then be used by the client to access the component via the interface. If the interface is not supported, then the special value NULL is returned.

Conceptually, within a running instance of each COM component, a table of the interfaces implemented by the component is maintained. When the component instance is initialized, its table is populated with the names of all the interfaces that the component implements. Associated with each name is a pointer to the code that implements the particular interface.

When QueryInterface is called by a client of the component, the component consults its table of implemented interfaces. If the interface being queried about is implemented, then the reference that is returned contains data that essentially points to the implementation of the interface. This data enables the component's client to access the interface and therefore its underlying implementation.

In COM, the interfaces that are supported by a component cannot change once the component has been initialized.