Component Definition Document (CDD) for the Basic Client-Server Example Component Assembly

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1 Introduction

1.1 Scope

This document captures the specification and design for the Basic Client-Server Example software component assembly. This example assembly is targeted for deployment on the Scalable Node Architecture (SNA) real-time component framework. As such, it must be compliant with SNA Component Based Architecture (CBA) design guidelines.

This specification defines the component assembly's functional, interface and performance requirements, the context in which it must operate, and any design constraints it must adhere to. It provides criteria for verifying compliance, but it does not state methods for achieving results.

This is intended to be a relatively informal living document, to be included in same CM repository and package as the component source code. This CDD will initially be populated by a system engineer or software architect/lead to define component design constraints & guidelines. Over time, it will transition to enhance the "to be built" specification sections with "as built" design information documenting the final component product.

2 Applicable Documents

2.1 Applicable Government Documents

Document No.	Title

2.2 Other Applicable Documents

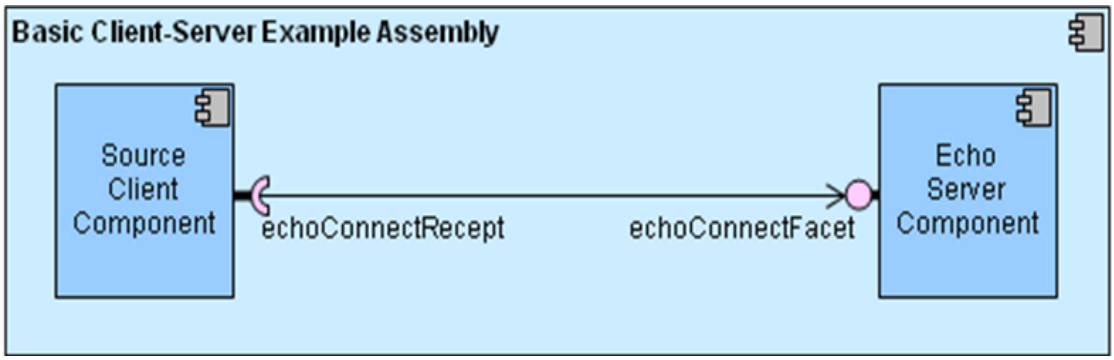
Document No.	Title

3 Component Description

3.1 Overview

The Basic Client-Server Example component assembly is one of the component source examples included in the SNA SDK for reference, testing and experimentation. It illustrates a simple component-based request-response information exchange pattern utilizing two single-port monolithic components. This example is fundamental to service oriented architecture design patterns. The Source Client component periodically invokes a synchronous echoText() method call on a service interface provided by the Echo Server component, which logs the service call event. The assembly containing these two components is shown in Figure 3-1 below.

Figure 3-1 – Basic Client-Server Example Component Assembly



3.2 Operational Context

This simple assembly is completely self contained and has no external connections. It is designed to operate solely within the constraints of the SNA SDK development environment to allow a new user/developer to step through the SNA component based development (CBD) process of loading a component assembly into the SNA IDE, building/compiling it, and then executing it.

The example is provided with an appropriate set of SNA configuration files and a deployment plan to support its execution within a single-host SNA SDK "localhost" Virtual Machine (VM). Alternative variations on the default supplied design and deployment are possible via experimentation by a software developer.

4 Component Interfaces

The Basic Client-Server Example assembly defines a single internal connection between a "required" client "receptacle" port on the Source Client monolithic component and a "provided" service "facet" port on the Echo Server monolithic component, as shown in Figure 3-1. The component assembly has no external interfaces.

4.1 Service Ports

4.1.1 Echo Connect Service (internal)

This service interface provided by the Echo Server monolithic component defines a single echoText() method. Execution of this method by a client will cause it to generate a log message describing the service call event, including printout of a text string passed in the call from the client.

4.2 Client Ports

4.2.1 Echo Connect Client (internal)

This client interface on the Service Client monolithic component is used to periodically call the echoText() method provided by the Echo Connect service.

4.3 Publisher Ports

There are no internal or external publisher ports defined for this component assembly.

4.4 Subscriber Ports

There are no internal or external subscriber ports defined for this component assembly.

5 Component Functionality

At startup, the Service Client component sets an SNA timer (per the SNA Time Management API) to generate a timer event every 5 seconds. Upon timer expiration, the client component's timer callback invokes a synchronous call of the echoText() method provided by the Echo Server's Echo Connect service, and then resets the timer. When the service call event handler is executed on the Echo Server component, it will log a message (per the SNA Logging API) to note the event. Once started, this scenario will execute indefinitely, or until the deployment is halted manually.

Per the default deployment plan provided with this example, the client and service components will execute in separate processes/containers on the same host. Alternative deployments wherein the two processes run on different hosts, or wherein the two components are locally collocated within the same process/container are also possible. No code changes are required in either case.

6 Configurable Parameters

Since this component assembly is intended to support run-time experimentation, it is also packaged with a full set of SNA compliant run-time execution configuration and deployment files.

7 Design Constraints

1. A Source Client component will periodically invoke the echoText() method call on an Echo Connect service provided by the Echo Server component.
2. An Echo Server component will provide an implementation of the echoText() method on an Echo Connect service port and output a log message to indicate each call made to it.
3. The Basic Client-Server Example component assembly will follow established naming conventions and code organization guidance defined in the SNA SDK documentation, such that new SNA software developers can use it as a design reference.
4. A full set of SNA compliant configuration and deployment files will be provided with this example in order to support run-time execution in a default single-host target deployment.
5. This example will utilize the standard SNA APIs to perform all functions.

8 Component Test

This 2-component assembly must be executable on a single "localhost" development computer, to include the SNA SDK x86-64 VM at a minimum. Users can experiment with the deployment plan to redeploy to an alternative 2-host target environment if desired.

9 Component Dependencies

The Basic Client-Server Example assembly is self contained and has no dependencies on any other application components. Its only dependency is on the SNA SDK's run time execution environment.